Part

B

# Section 2: Bear River Marbled Murrelet Report

# BEAR RIVER

# MARBLED MURRELET

# STUDY

Prepared for:

SCOTIA PACIFIC HOLDING **Company**
and
SIERRA PACIFIC INDUSTRIES

Prepared by:

**PACIFIC NORTHWESTER N BIOLOGICAL**
P.O. Box 150, Trinidad, California 95570
David W. Nielsen, Principal Biologist
Gregory Leiston, Mapping

November, 1994

APR 1 7 1995 AT

STATE OF CALIFORNIA-THE RESOURCES AGENCY PETE WILSON, Governor

**DEPARTMENT OF FISH AND GAME**

Region 1- Environmental Services
Timber Harvest Assessment
619 Second Street
Eureka, California 95501
**(707)441-5670,** FAX(707) **441-5740**

**12** April I995

Ray Miller
Scotia Pacific Holding Company
- P.O. Box 37
Scotia, California 95565

RE: 95-BR-07

Dear Mr. Miller:

The California Department of Fish and Game (Department) is in receipt of the Bear River Marbled Murrelet Study prepared for Scotia Pacific Holding Company and Sierra Pacific Industries by Pacific Northwestern Biological, dated November 1994.

You have asked the Department and the U.S. Fish and Wildlife Service (Service) to consider the information in this report in the context of the question: Do additional murrelet surveys need to be conducted within the boundaries of the Study Area? You believe that the information presented in this report will allow the Service and Department to conclude that murrelets do not nest or otherwise utilize the Bear River Study Area thereby making further surveys to detect murrelet presence here no longer necessary.

The Bear River study report states that the area of consideration encompasses 71,051 acres (primarily the Bear River, Davis Creek and Singley Creek drainages) extending ***from the*** Pacific Ocean east approximately nineteen (19) miles inland and averages about six (6) miles wide, approximately 111 square miles (see attached map). The study area is made up of approximately 50% forest lands and 50% non-forest lands (grasslands, brushfields, human developments, etc.). The predominate coniferous tree species are Douglas fir and grand fir, various hardwood tree species are also common throughout the area Weather conditions in this area are extremely variable but in general are considered harsh and somewhat inhospitable due to large amounts of rain, high winds and extremes in fluctuations of diurnal temperatures.

The report also mentions that over the last seven (7) years (1988-94) various efforts to detect the presence of mm-relets in the Study Area have been accomplished. There are 327 known murrelet survey visits to the Study Area which involve about 60% of the forest stands thought to have potential as murrelet habitat. The areas surveyed to date include "all of the largest stands of potential marbled murrelet nesting habitat in the Study Area and all of the stands which were identified as having the best marbled murrelet nesting structure". Virtually all of the survey results from the Study Area are reported to be negative. The exceptions to this are two, single heard only detections reported by surveyors from the Redwood Sciences Laboratory in 1988 near the mouth of Bear River at Capetown. These detections were labeled as "probable" and were not verified by visual detections.

On numerous occasions over the last several years Department and Service biologists, familiar with murrelet habitat and biology, have visited much of the Study Area Most of these visits have been to conduct threatened-endangered species consultations (primarily NSO and murrelet) on individual projects and also provide input and guidance to this study effort Considering the information gathered during these site visits and the additional information provided in the Bear River study report, the

Department provides the following comments:

1. The entire Study Area is close enough to the ocean that access to this area by murrelets using the immediate off-shore coastal area should not be a problem, in terms of distance.

2. There exists in the Study Area stands of coniferous trees of adequate size and structure that could be suitable as nesting habitat for murrelets.

3. The Study Area is highly fragmented due to a combination of apparently natural conditions (large prairie areas intermixed with forest lands) and ongoing ranching and timber harvest operations.

4. Stands that have been viewed in the Bear River Study Area, and reported to be the largest and best by the report submitters, have been determined to be structurally marginal to moderate as potentiaI murrelet nesting habitat.

5. The Study Area experiences extreme weather conditions, especially high velocity on-shore winds.

6. The ocean conditions immediately off-shore from the Study Area are considered very inhospitable for murrelets due to high winds, very rough ocean surface and turbid waters which tend to make sight feeding by mm-relets very limited The "at sea" surveys offshore of this area have resulted in very few murrelet detections.

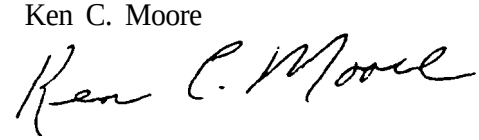
7. More than 320 murrelet survey visits, that reportedly conform to the PSG murrelet intensive survey protocol, have been accomplished in the Study Area with no detections.

8. Corvids, which are known murrelet nest predators, are reported to be quite abundant within the study area and may be an ongoing factor in discouraging murrelet nesting attempts in this area.

Considering items 3 through 8 listed above the Department concludes, at this time, that it is highly unlikely that murrelets currently utilized the Bear River Study Area for nesting. Therefore, it is not necessary, at this time, to continue surveys for murrelet presence within the boundaries of the Study Area. The Service (Ken Hoffman - Arcata) has reviewed this letter and concurs with it's findings.

If at any time in the future additional information concerning murrelet use of the Study Area or nearby areas becomes known this decision will be reevaluated. Also, if additional information on murrelet life requisites or essential behavior activities is learned that may influence this decision that too wilI be re-evaluated by the Department and Service. By accepting the determination that murrelet surveys are currently no longer required within the boundaries of the Study Area all parties mentioned above agree to immediately inform the Department and Service of any new or additionaI information, that becomes known to them, concerning murrelet detections or activity within or adjacent to the Study Area for agency evaluation and comment.

Ken C. Moore



Environmental Specialist III

cc: Mark Stopher Esther Burkett Jim Steele Ken Hoffman
William Kleiner Dave Nielsen Review Team Chair-CDF Fortuna

# BEAR RIVER
# MARBLED MURRELET STUDY

## INTRODUCTION

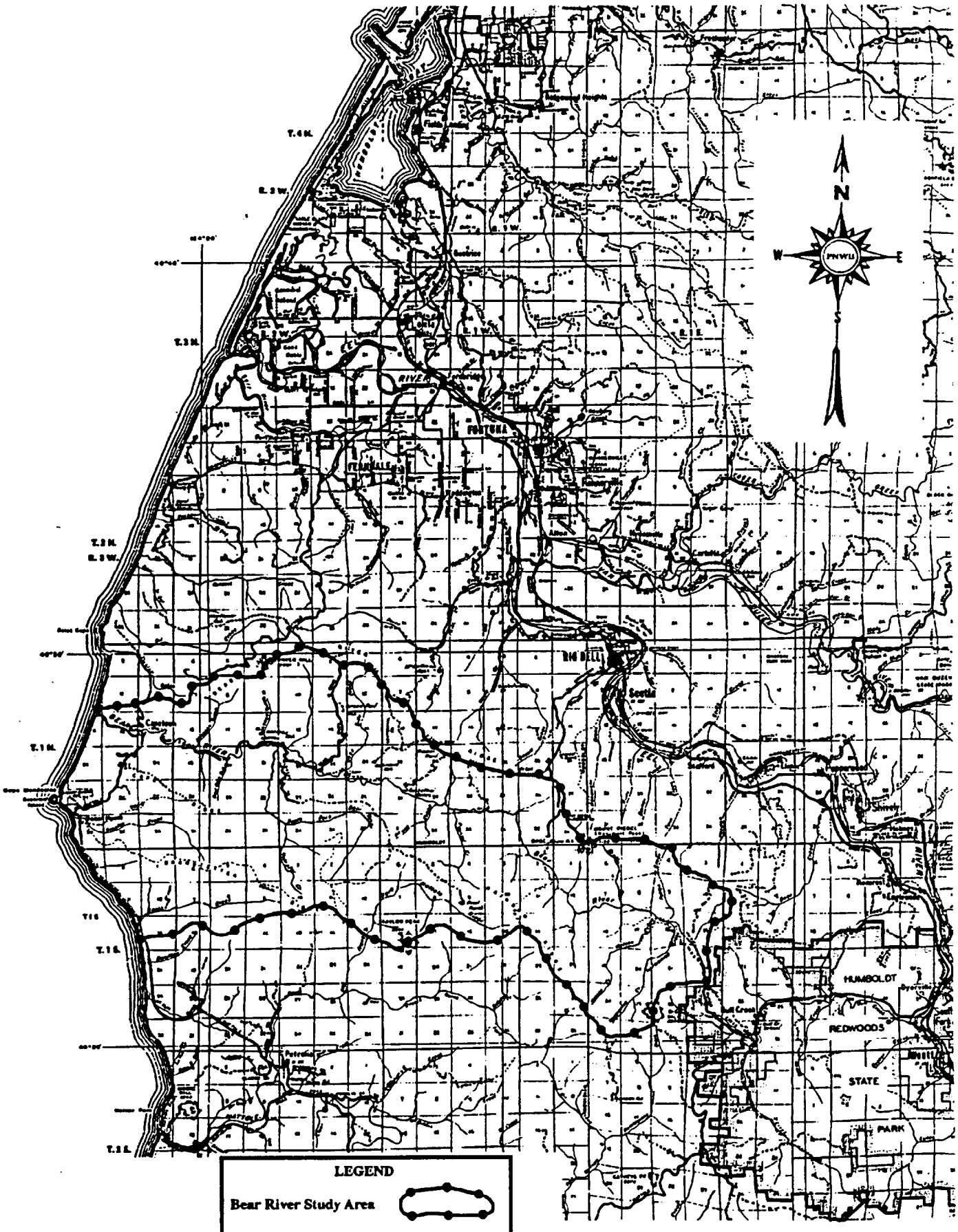
The marbled murrelet (Brachyramphus marmoratus) is a seabird which in North America nests at inland sites from Alaska south to Santa Cruz, California. The marbled mm-relet is state listed as an endangered species in California, and federally listed as threatened in Washington, Oregon and California. In the Pacific Northwest this species is believed to be associated with old-growth and mature coniferous forests (Sealy and Carter, 1984; Carter and Erickson, 1988; Paton and Ralph, 1988; Nelson, 1989, 1990; Hamer and Cummins, 1990; Hamer et al., 1991) and recent studies indicate that in California the marbled murrelet is closely associated with the remaining old-growth redwood ***(Sequoia sempervirens) stands*** (Paton and Ralph, 1988, 1990; Ralph et al., 1990; Miller and Ralph, in press).

The original purpose of this study was to attempt to determine if there is marbled murrelet use of potentially suitable nesting habitat located within the Bear River, Singley Creek, Davis Creek and North Fork of the Mattole River drainages. The potentially suitable marbled murrelet nesting habitat located within these study areas was identified and mapped, and all of the known marbled murrelet survey data from the study areas were compiled and then plotted on a habitat map. It was discovered that little survey data existed for that portion of the North Fork of the Mattole River drainage located south of Walker Ridge, Taylor Peak and Long Ridge, so those areas were removed from the study area. The study area contains the Bear River, Davis Creek, and Singley Creek drainages and thatportion of the North Fork of the Mattole River drainage that wraps around Taylor Peak north of Long Ridge, and these areas are referred to herein as the "Bear River Study Area" (see Bear River Study Area Vicinity Map).

## STUDY AREA

The Bear River Study Area is 71,051 acres in size and ranges in elevation from sea level to 3,390 feet on Taylor Peak. The western edge of the study area ranges from Bear River Ridge south to Walker Ridge and is divided in half by Cape Ridge; the western terminus of Cape Ridge is Cape Mendocino which is an area known for its turbulent weather patterns. The study area contains 32,930 acres of forested land in early to late seral stages (46% of the area), 29,888 acres of perennial prairies and pastures (42% of the area), and 8,233 acres of brush fields (12% of the area; see Table 1). Douglas-fir (Pseudotsuga ***menziesii)*** and grand fir ***(Abies grandis) are the*** predominant conifers on the forested portions of the study area, and red alder ***(Alnus rubru),*** California laurel ***(Umbellulariu californica),*** big-leaf maple (Acer ***macrophyllum)*** and tan-oak (Lithocarpus ***densiflora)*** are the dominant hardwood tree species. The late seral forested portions of the study area are generally highly fragmented by prairies, brush fields, and past timber harvesting and there are few remaining large old-growth coniferous stands in the study area. There are no known stands of redwood in the study area.

# BEAR RIVER STUDY AREA VICINITY MAP



## METHODS

### Habitat Definitions

**Prior to conducting** this study, marbled murrelet specialists in the California Department of Fish and Game (Moore) and the U.S. Fish and Wildlife Service (Horton) were consulted regarding the **design** of the study and the development of a project definition for habitat which would be identified as having some of the attributes of suitable marbled murrelet habitat. For the purposes of this study the following definition was developed to "trigger" when concerns for the marbled murrelet would be initiated. This definition was developed for the purpose of mapping habitat prior to a field review and it should not be used to redefine or confine any scientifically based definition of "potentially suitable marbled murrelet habitat."

**For the purpose of this study, concerns for marbled murrelets may be triggered in habitat with the following attributes:**

1. mature and old growth coniferous stands, and second growth coniferous stands (65-80 years old) where a portion of the stand has a residual component of mature/over mature ***or*** old growth trees:

with

2. substrate suitable for nesting (one or more of the following):
   a. large lateral limbs
   b. moss covered lateral limbs as small as 8-10 inches in diameter
   c. broken tops
   d. debris platforms
   e. spray of branches from a single node (creating a platform)
   f. cavities

**and**

3. a continuous or contiguous canopy.

A continuous or contiguous canopy is defined as a canopy with open to, dense crown canopy closure (25-100%). or a stand where the conifer regeneration has developed to the degree where the second growth canopy supports the canopy of the conifers which possess nesting substrate. For example, a seed tree cut with less than 25% crown closure and a 20 year old understory would not **be suitable** nesting habitat even if **the individual** seed trees had nesting substrate. However, a seed tree cut with less than 25% crown closure and a 70 year old understory may be considered suitable nesting habitat if the individual seed trees (or the understory) had nesting substrate and the regeneration supported the crown canopy by enclosing the lower portions of the dominant crowns and/or protecting potential nest platforms from weather and predators.

**An isolated stand with suitable nesting substrate must be > eight acres in size.** A stand is isolated if there is **no** other suitable or potentially suitable marbled murrelet habitat within 100 meters of the stand.

It is important to note that the above definition does not describe suitable marbled mm-relet nesting habitat, but rather describes habitat which contains some of the elements thought to be associated with suitable marbled murrelet nesting habitat. Some important habitat attributes not considered in the "triggering definition*' are: dominant tree species composition, density of old growth canopy cover, topography, stand configuration. presence of interior forest microhabitats, elevation, distance from the ocean, and nest predator abundance. Miller and Ralph (in press) found that some of these attributes had a significant influence on marbled murrelet use. In their study, mean marbled murrelet detection levels were three times higher in major drainages than on major ridges, occupied stands had a higher percentage of old growth crown canopy cover, and the presence of redwood as a dominant tree species was a factor for predicting higher detection and occupancy levels. Miller and Ralph concluded that it is unlikely that any one habitat factor will best describe marbled murrelet habitat, but density of old growth cover and tree species composition are important factors and these habitat attributes may be the strongest predictors of marbled murrelet presence in California.

**Table 1. Habitat Data for the Bear River Study Area**

| | |
|---|---|
| **Size of Study Area** | 71,051 acres |
| **Vegetation Types in Study Area** | |
| Forested (all seral stages) | 32,930 acres (46%) |
| Prairies and Pastures | 29,888 acres (42%) |
| Brush Fields | 8,233 acres (12%) |
| **Habitat which Triggers Concerns for Marbled Murrelets** | **4,47** 1 acres (6%) |
| **Potential Marbled Murrelet Nesting Habitat**[2] | 2,275 acres (3%) |

**'Habitat that meets the CDF&G and USF&WS project definition of habitat that has attributes which trigger concerns for marbled murrelets (see METHODS).**

***This is a subset of the habitat that has attributes which trigger concerns for marbled murrelets (see Methods).**

**Within the Bear River Study Area, ridge-top topography and high elevation often** combine to make sites harsh and unprotected, and when these factors are present in stands with open canopies or no interior forest microhabitats, these stands are not likely to be suitable for marbled mm-relet nesting. Stand configuration may be one of the most important factors affecting habitat suitable for marbled murrelet nesting; long narrow stands of timber or highly fragmented stands can be entirely edge habitat with no interior forest microhabitats. Many of these stands have open canopies and are adjacent to prairies or young conifer regeneration, and these areas are known to have high populations of corvids (Steller's jays, crows and ravens) and raptors (Kleiner, Graham, and Leisten, pers. comm.), and are not likely **to** provide the hiding cover needed for marbled murrelet nestlings. **Because** of these **factors, we** concluded that much of the habitat which meets the criteria of the "triggering definition** would be determined to be unsuitable for potential **marbled** murrelet nesting habitat. This, in fact, was the case; after we mapped the habitat

according to the "'triggering definition," we discovered that previous DFG marbled murrelet consultations had determined that several of these stands were unsuitable for marbled murrelet nesting habitat.

In this study, the "'triggering definition" was used to identify habitat which might raise marbled murrelet concerns, but a second habitat definition was developed to identify habitats most likely to provide "potential marbled murrelet nesting habitat.*' For the purpose of this study, potential marbled murrelet nesting habitat is the subset of the "triggering habitat" which meets the following criteria:

1. 'The stand has interior forest micro-habitats. We considered stand configurations containing areas with a minimum radius (distance from edge) of three crown canopy tree lengths (approximately 500 feet) to meet this definition.

and

2. The average canopy closure of the stand is > 60% (the WHR standard for dense crown canopy closure[1]).

and

3. The stand has a low elevation component (mid-slope or lower) (ridge-top stands were not included unless the stand extended down one of the slopes).

**Habitat Identification and Mapping**

Habitats meeting the criteria of "triggering habitat" and "'potential marbled murrelet nesting habitat" were identified using Scotia Pacific-Holding Company's geographical information system (GIS), Sierra Pacific Industry's (GIS, 1991 color aerial photographs (scale: 1" = 1,000'), Western Timber Services' foresters (for non-industrial private lands), California Department of Fish and Game (CDFG) marbled murrelet consultation documents, and on-the-ground reconnaissance. Marbled mm-relet habitat acreages were obtained by measuring their area on base maps scaled at 1:24,000 and 1:36,000 and from aerial photos scaled at 1: 12,000. A TAMAYA PLANIX 7 digital planimeter was used to measure areas in this study (+2% accuracy). All areas identified as "triggering habitat" or "potential marbled murrelet nesting habitat*' were plotted on a map at the scale of 1:36,000. The accuracy of the habitat identification effort was then validated by biologists from the California Department of Fish and Game (Moore) and the United States Fish and Wildlife Service (Horton) during a field review conducted on 13 April 1994 (see attached Appendix I for a summary Of the field review findings),

The number of acres of prairie in the study area was calculated by measuring the number of acres of woody vegetation on 15 minute USGS quadrangles and subtracting that amount from the total number of acres in the watershed. The woody vegetation type in these watersheds represents a coastal scrub/forest complex of habitats. Twenty percent of the coastal scrub/forest complex is shown as coastal scrub and the remainder is shown as forest habitats of all seral stages. The 20% factor for coastal scrub was determined by doing an intensive habitat analysis on the Singley **Creek drainage and using that analysis as a model for the adjacent watersheds. The habitat in the** Singley Creek drainage was typed using the California Wildlife Habitat Relationships System and

[1] WER = California Wildlife Habitat Relationships System

the proportion of coastal scrub in the scrub/forest habitat complex was calculated in the following manner:

| | |
|---|---|
| Area of Watershed | 3,536 acres |
| Area of perennial grassland | 588 acres |
| Area of coastal scrub/forest complex | 2,948 acres |
| Area of coastal scrub | 586 acres |
| Proportion of coastal scrub | 586 acres / 2,948 acres = 19.9% |

Some variation in the proportion of coastal scrub habitat is expected between both major and minor drainages, and the acreage values for coastal shrub in Table 1 should be considered an estimate based on a 5% sample of the study area.

**Collection of Survey Data and Detection Data**

All of the known marbled mm-relet survey and detection data from the study area and from the immediately adjacent watersheds and offshore areas were collected. Data were obtained from the following private and agency sources: a recent publication (Paton and Ralph, 1990); Redwood Sciences Laboratory (Miller and Long); California Department of Fish and Game, Marbled Murrelet Database (Burkett); Scotia Pacific Holding Company (Chinnici); Sierra Pacific Industries (Self and Blackwell); Western limber Services (Kleiner); Mad River Biologists (LeValley); Natural Resources Management Corporation (Hewitt); and Pacific Northwestern Biological (Nielsen). Completed survey forms were collected and reviewed to validate all unpublished survey data collected during on-shore marbled murrelet surveys. Offshore detections from the DFG Marbled Murrelet Database are referenced by a four digit database record number but offshore data from the Redwood Science Laboratory were plotted directly from survey records and do not at this time have reference numbers. A copy of the DFG Marbled Murrelet Database Report is attached as Appendix II.

The survey data from all of the intensive surveys were entered into two survey databases. The Bear River/Mattole River MAMU Survey Database (Appendix III) contains all of the known intensive survey data from the Bear River Study Area, the drainage north of Bear River (Oil Creek), and the drainage south of Bear River (Mattole River). The Bear River Study Area MAMU Survey Database (Appendix IV) is the subset of the previous Database which contains all of the known intensive survey data from the Bear River Study Area. The databases contain the following fields:

Survey: the name of the survey (keyed to mapping location)
Station: the survey station number (keyed to survey form)
Visit 1. Visit 2, . . . . the dates that survey visits were conducted
R-l, R-2, . . . . R-l = result of visit #l (number of detections), R-2 = result of visit #2...
Yrs: 1 = one year survey; 2 = two year survey
Acres: the number of acres of "triggering habitat*' or "potential marbled murrelet nesting habitat" surveyed from the station
DFG: Y = DFG marbled murrelet consultation conducted on the area surveyed; **N** = no previous consultation

The number of acres surveyed for each station was determined by plotting 30 acre circles around every survey station and estimating the number of full quadrants occupied by "'triggering habitat" or "'potential marbled murrelet nesting habitat" (e.g., 1 quadrant = 8 acres, 2 quadrants = 15 acres, 3 quadrants = 23 acres, 4 quadrants = 30 acres). Habitat surveyed by more than one station was counted only once, and the acreage of small stands was divided between the number of stations used to survey the stand. For example, if several stations were used to survey a 12 acre stand, the 12 acres would be divided between the stations according to the degree of coverage at each station (no rounding up to full quadrants for small stands). This method of counting the number of acres surveyed is very conservative because it does not recount areas with overlapping coverages (which tend to increase the confidence levels of the survey), but by using this procedure the total number of acres surveyed in each watershed can be determined and the proportion of each habitat type surveyed in each watershed can be calculated.

## SURVEY RESULTS

### On-Shore Surveys

Table 2 contains a summary of all of the known on-shore marbled murrelet surveys conducted in the Bear River Study Area. All of the intensive survey data in these tables are summarized from the marbled mm-relet survey database in Appendix IV and the transect data are from the CDFG Marbled Murrelet Database, Redwood Sciences Laboratory (Miller and Long), and Paton and Ralph, 1990.

During a seven year period beginning in 1988, 327 intensive survey visits were conducted at 92 survey stations and 102 survey visits were conducted at 51 transect stations within the Bear River Study Area. No marbled murrelet detections were recorded from either the intensive survey effort or the transect survey effort, however, two "probable" detections were made during the 24 August 1989 run of the Capetown Transect (see Marbled Murrelet Survey Transect Location Map). One of the "probable" detections (DFG record #1475) was from a station near the Capetown bridge and the other detection (DFG record #1476) was on the top of Cape Ridge. These survey stations were located near open hardwood-riparian and prairie habitats respectively, and there is no suitable potential marbled murrelet nesting habitat adjacent to either of these locations. Both detections were a single vocalization and there was some doubt about the accuracy of the detection, so these detections were not included in the results reported by Paton and Ralph, 1990 (Ralph, pers. comm.). The station near the Capetown bridge was later surveyed intensively on 12 May 1994 and 19 July 1994 but no marbled murrelet detections were recorded.

Table 3 contains the results of all of the known on-shore marbled murrelet surveys conducted in the areas immediately adjacent to the Bear River Study Area. All of the intensive survey data in these tables are summarized from the marbled murrelet survey database in Appendix III and the transect data are from the CDFG Marbled Murrelet Database, Redwood Sciences Laboratory (Miller and Long), and Paton and Ralph, 1990.

During 1988 and 1989 154 survey visits were conducted at 77 transect stations in areas adjacent to the Bear River Study Area and during 1992 and 1993,30 intensive survey visits were conducted at 17 survey' stations in areas adjacent to the Study Area. No marbled murrelet detections were recorded during intensive surveys conducted in the Oil Creek and the North Fork of the Mattole River drainages, located immediately north and south of the Bear River Study Area

# MARBLED MURRELET SURVEY TRANSECT LOCATION MAP

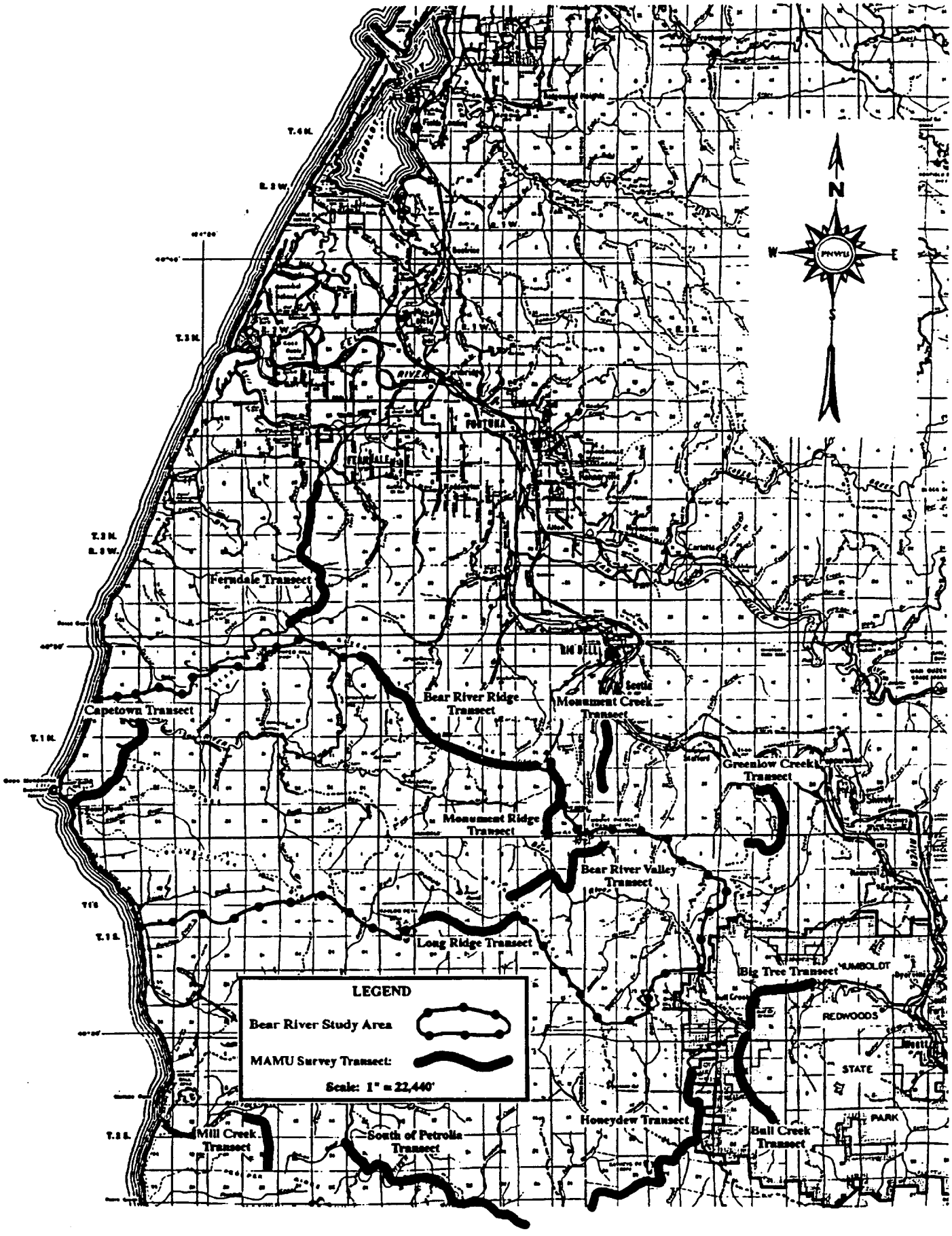


**Table 2. Summary of the Marbled Murrelet Survey Effort for each Drainage within the Bear River Study Area.**

**Bear River Study Area**

Intensive surveys:
- 92 stations
- 327 survey visits
- 1,304 acres surveyed

Transects:
- Capetown: 20 stations surveyed
- Bear River: 22 stations surveyed
- Bear River Ridge: 20 stations surveyed
- Monument Ridge: 22 stations surveyed
- Long Ridge: 18 stations surveyed

**Bear River Drainage**

Intensive surveys:
- 34 stations
- 178 survey visits
- 297 acres surveyed

Transects:
- Capetown: 20 stations surveyed
- Bear River: 22 stations surveyed
- Bear River **Ridge: 20 stations** surveyed
- Monument Ridge: 22 stations surveyed
- Long Ridge: 18 stations surveyed

**Davis Creek Drainage**

Intensive Surveys:
- 11 stations
- 24 survey visits
- 183 acres surveyed

Transects:
- None

**North Forks of the Mattole Drainage**

Intensive Surveys:
- 12 stations
- 58 survey visits
- 234 acres surveyed

Transects:
- Long Ridge: 18 stations surveyed

**Singley Creek Drainage**

Intensive Surveys:
- 35 stations
- 67 survey visits
- 590 acres surveyed

Transects:
- None

respectively, but several marbled murrelet detections were recorded from survey transects run in other drainages near the Study Area. There were four marbled murrelet detections in the Eel River drainage north of Bear River Ridge and Monument Ridge: one was 2.3 miles north of the Bear River Study Area on the Ferndale Transect , two were 2 miles north of the Study Area on the Monument Creek Transect , and one was 2.7 miles northeast of the Study Area on the Greenlow Creek Transect. Additionally, there were five marbled murrelet detections on the Big Tree Transect; the closest was 2.5 miles east of the study area. There were 12 detections on the ridge top southwest of Panther Gap on the Honeydew Transect, approximately 4 - 4.5 miles south of the Study Area. There was also a possible detection six miles south of the Study Area in the Mill Creek Transect but the observer was not positive of the identification (Paton and Ralph, 1990).

**Table 3. Summary of the Marbled Murrelet Survey Efforts adjacent to the Bear River Study Area.**

| | **Marbled Murrelet Detections** |
|---|---|
| **Eel** River **Tributaries** | |
| Transects: | |
| Bull Creek: 22 stations surveyed | 0 |
| Big Tree: 18 stations surveyed | 5 |
| Greenlow Creek: 22 stations surveyed | 1 |
| Monument Creek: 16 stations surveyed | **2** |
| Ferndale: 20 stations surveyed | 1 |
| **Mattole River Drainage** | |
| Intensive Surveys: | |
| 12 stations | |
| **20** survey visits | ***0*** |
| 89 acres surveyed | |
| Transects: | |
| Honeydew: 20 stations surveyed | 12 |
| Mill Creek: 16 stations surveyed | **1(?)** |
| South of Petrolia: 20 stations surveyed | 0 |
| **Oil Creek Drainage** | |
| Intensive Surveys: | |
| **5 stations** | |
| **10 survey visits** | **0** |
| **18 acres surveyed** | |

**Offshore Surveys**

Table 4 contains a summary of all of the known offshore marbled murrelet survey data for the areas offshore of the Bear River Study Area. The 1991-1992 data is from the CDFG marbled murrelet database, the 1993 data was plotted from Redwood Sciences Laboratory survey data sheets, and the **1994 data is** from Crescent Coastal **Research** (Strong). The offshore areas in the table are delineated as follows: the Oil Creek area includes that offshore area located between Oil Creek Ridge and Bear River Ridge; the Bear River area is from Bear River Ridge to Cape

Mendocino; the Singley Creek area is from Cape Mendocino to Steamboat Rock; the Davis Creek area is from Steamboat Rock to Walker Ridge; the Mattole River area is from Walker Ridge to Punta Gorda. During a four year period there were only 17 marbled murrelets detected offshore of the Bear River Study Area but during the same period an additional 44 marbled mm-relets were detected in the offshore areas immediately north and south of the Study Area.

**Table 4. The number of Marbled Murrelets detected offshore from the Bear River Study Area and adjacent drainages.**

**Redwood Science Laboratory Offshore Survey Transect Data**

| | October, 1991 | September, 1992 | August, 1993 |
|---|---|---|---|
| **Offshore Areas** | | | |
| Oil Creek | - | 17 | 6 |
| Bear River | 2 | 6 | 3 |
| Singley Creek | - | 2 | 2 |
| Davis Creek | | 0 | 0 |
| Mattole River | | 19 | 2 |

1994 **Offshore Data** (complete record in Appendix V)

June 23.1994 - From False Cape to Big Flat : No detections
July 23, 1994 - From False Cape to Big Flat: Steamboat: 2-detections, 2-birds
Punta Gorda Lighthouse: 6-detections, 11 birds
Tip of Big Flat: l-detection, 2-birds

## DISCUSSION

On 13 April 1994, the Bear River Study Area was field reviewed by representatives of the CDFG and the US Fish and Wildlife Service for the. purpose of evaluating the suitability of potential marbled murrelet habitat located within the study area It was concluded after the field review that the majority of the habitats reviewed during the field trip were considered unsuitable for marbled mm-relet nesting habitat. Fifty-four percent of the Bear River Study Area consists of pastures, prairies and **brush fields, and much** of the remaining habitat is early to mid-seral stage forest. Stands that did not meet the working definition of "potential marbled mm-relet nesting habitat" tended to be highly fragmented, with open to sparse canopies and harsh microhabitats; even though these stands contained some of the habitat attributes that trigger concerns for marbled mm-relets, these stands were not considered to be suitable marbled murrelet nesting habitat.

During the field review it was further concluded that the Singley Creek stand, located approximately 2 miles east of the Pacific Ocean, had the best individual tree structure and stand **attributes of tiny of the potential marbled murrelet nesting habitat in the Study Area. This stand** was surveyed for marbled murrelets in 1992 and 1993, and after a consultation with the California Department of Fish and Game, it was concluded that it was unlikely that marbled murrelets use this stand. The Davis Creek stand which was surveyed in 1993 was also considered

to have potential marbled murrelet nesting structure and it was recommended that this stand be surveyed again during the 1994 season. The Davis Creek stand was surveyed during 1994, and no marbled murrelets were detected.

The area north of Long Ridge identified as "Stand A" was also considered to contain potential marbled murrelet nesting structure. A transect survey was conducted along the southern edge of Stand A in 1988, and intensive surveys were conducted along the southern edge of the stand in 1992 and 1993. During 1994, all of "Stand A" was intensively surveyed with four visits to each survey station. No marbled mm-relets were detected during any of the above surveys.

After the field review it was agreed that three marbled murrelet survey stations would be established along the lower main stem of Bear River to sample the corridor leading from the ocean to the headwaters of Bear River. As agreed, these stations (B-15/1, B-15/2, B-15/3) were surveyed once each in May and once again in the last half of July in 1994. There were no marbled murrelet detections.

Table 5 contains a summary of the marbled murrelet survey and consultation results for the 2,275 acres of potential **marbled** murrelet nesting habitat which **has** been identified in the Bear River Study Area. Approximately 50% (1,138 acres) of this potential marbled murrelet nesting habitat has been intensively surveyed and no marbled murrelets have been detected during these surveys.

**Table 5. Survey and consultation data for the Potential Marbled Murrelet Nesting Habitat located in the Bear River Study Area.**

| | |
|---|---|
| Potential Marbled Murrelet Nesting Habitat' | 2,275 acres |
| Potential Marbled Murrelet Nesting Habitat which has been Intensively Surveyed | 1,138 acres (50%) |

**Status of Marbled Murrelet Surveys on Stands with Potential Marbled Murrelet Nesting Habitat**

| | |
|---|---|
| **Marbled murrelet consultations with "no take" determinations** | |
| Singley Creek (part of 93WTS27) | 590 acres |
| Walker Ridge. (12SPI92) | 270 acres |
| Bear River (93SPH26) | 80 acres |
| Peaked Bear (62TPL92) | 28 acres |
| Beer Bottle Creek (67TPL92) | 6 3 |
| Total: | 1,031 acres (45%) |
| **Stands surveyed intensively with no detections and no determination** | |
| SPI Davis Creek (D-l Survey) | 285 acres |
| SPHCO Long Ridge Stand "A" (M-l Survey) | 180 acres |
| Total: | 465 acres (20%) |
| **Stands with intensive surveys or "no take" determinations** | **1,496 acres (65%)** |

**'Habitat that is potentially suitable for marbled murrelet nesting (see Habitat Definitions); this is a subset of the habitat that has attributes which trigger concerns for marbled mumlets.**

As previously described, the acreage surveyed is a conservative figure which is calculated by summing the acreages surveyed at each survey station (see Methods). This figure does not take into consideration stand location, configuration, adjacent habitats, or any other factors which can influence the suitability of habitat. When a stand is surveyed, survey stations are typically located in the most superior potential marbled murrelet habitat in the stand. When state or federal agencies conduct endangered species consultations on stands which have been surveyed, the "no take" determination is based on a combination of factors, including level of survey effort and the suitability of the habitat, and if a "no take" determination is made, it is made for the stand under consideration, not just the area surveyed by individual survey stations. As a result, the sum of the acreages of the stands which have "no take" determinations may exceed the sum of the acreages surveyed in those stands, and this is the case within the Bear River Study Area.

The sum of the acreages of the stands with "no take" determinations is 1,031 acres and the sum of the acreages of the stands which have been intensively surveyed with no detections is 465 acres. A total of 1,496 acres, or 65% of the potentially suitable marbled murrelet habitat identified in the Study Area, has a recent "no take" determination or has been surveyed intensively with no marbled mm-relet detections. Additionally, all of the largest stands of potential marbled mm-relet nesting habitat in the Study Area and all of the stands which were identified as having the best marbled murrelet nesting structure during the April field review are included in this 65%.

A similar analysis of survey and consultation results was performed for the habitat which triggers concerns for marbled murrelets, and a summary of that information is contained in Table 6. The sum of the acreages of the stands with "no take" determinations and the stands which have been intensively surveyed with no detections is 2.267 acres, or 51% of the habitat which triggers concerns for marbled murrelets.

Except for the two "probable" detections in unsuitable habitat on the Capetown Transect, 327 intensive survey visits were conducted at 92 stations and 102 survey visits were conducted at 51 transect survey stations within the Bear River Study Area and no marbled murrelets were detected. Survey data from transects and intensive surveys conducted in areas adjacent to the Study Area had very low detection rates, except for transect surveys conducted immediately east of the Study Area.

Humboldt Redwoods State Park (HRSP) is located immediately east of the study area, and this 8,400 ha (20,750 acres) park contains large stands of old growth redwoods. High marbled murrelet detection rates have been recorded in HRSP; the Redcrest-Federation Transect which was run in 1988 recorded 5.8 marbled murrelet detections (Paton and Ralph, 1990). The Big Tree Transect which recorded 5 detections east of the Study Area runs through the western edge of HRSP and the Honeydew Transect which recorded 12 marbled mm-relet detections runs along a ridge top above the west boundary of the park. During 1994 The Pacific Lumber Company conducted intensive marbled murrelet surveys along the Bull Creek flats in HRSP and recorded high detection rates from these areas (Chinnici, pers. comm.). No potential marbled murrelet nesting habitat has been identified near the eastern edge of the Bear River Study Area, so it is likely that the marbled mm-relet detections in the transects east of the Study Area are associated with marbled murrelet activity in the old growth redwood stands in HRSP.

Ralph and Miller (in press) devised a method for estimating marbled murrelet population densities in the offshore waters of northern California. The highest estimated densities of

marbled murrelets occurred offshore from old growth redwood forests in Del None and northern Humboldt counties with densities as high as 65.15 birds/segment in the Klamath River to Big Lagoon section, and 105.67 birds/segment in the Big Lagoon to Trinidad section (a survey segment = 12 $km^2$). Marbled murrelet densities offshore from the Bear River Study Area were estimated at 18.00 birds/segment in the False Cape Mendocino to Cape Mendocino section and 13.93 birds/segment in the Cape Mendocino to Shelter Cove section.

**Table 6. Survey and consultation data for the Habitat which Triggers Concerns for Marbled Murrelets located in the Bear River Study Area.**

| | | |
|---|---|---|
| Habitat which triggers concerns for Marbled Murrelets | | 4,471 acres |
| Habitat which triggers concerns for Marbled **Murrelets** which has been Intensively Surveyed | | 1,304 acres (29%) |
| Status **of Marbled Murrelet Surveys on Stands with Habitat which triggers concerns for Marbled Murrelets** | | |
| **Marbled murrelet consultations with "'no take" determinations** | | |
| Singley Creek (part of **93WTS27)** | | 590 acres |
| Walker Ridge **(12SPI92)** | | 270 acres |
| **Bear River (93SPH26)** | | 80 acres |
| Peaked **Bear (62TPL92)** | | 28 acres |
| Beer Bottle Creek **(67TPL92)** | | 63 acres |
| McGinnis Prairie (part of **10SPI92)** | | 405 acres |
| South Rainbow (part of **21SPI91)** | | 65 acres |
| Long Ridge Stand **"C"** (part of **93SPH38)** | | 181 acres |
| | Total: | **1,682** acres (38%) |
| **Surveyed intensively with no detections but no consultation** | | |
| SPI Davis Creek (D-l Survey) | | 285 acres |
| SPHCO Long Ridge Stand "A" (M-l Survey) | | 180 acres |
| Surveys: B-2, B-5, B-6, B-8, B-9, B-11, B-13, B-14 | | 120 acres |
| | Total: | 585 acres (13%) |
| **Stands with intensive surveys or "no take" determinations** | | 2,267 **acres (51%)** |

Humboldt Redwoods State Park contains the largest remaining old growth redwood stands in southern Humboldt County and these stands are almost due east of the marbled murrelet populations detected offshore of the Bear River Study Area. Marbled murrelets are known to visit locations as far inland as 75 km (Carter and Sealy, 1986) and HRSP is within the flight range of marbled murrelet populations detected offshore from the Study Area.

Marbled murrelets have been observed to use a low point in a ridge to minimize flight distances (Paton and Ralph, 1988, 1990) and the detections made along the Honeydew Transect are located id the vicinity of Panther Gap and Windy Nip Gap on the ridge separating the Mattole River drainage from the Eel River drainage. The flight distance from Bull Creek on the eastern side of Humboldt Redwoods State Park down the Eel River corridor to the ocean is approximately 60 km

whereas the distance from Bull Creek directly west over the ridge to the ocean is only 28 km. It is possible that marbled mm-relet populations detected offshore of the Study Area are associated with marbled murrelet activity detected in either Humboldt Redwoods State Park or in private old growth stands located north of the park.

## CONCLUSION

The absence of marbled murrelets from 65% of the habitat identified as potential marbled murrelet nesting habitat (stands with surveys and/or consultations) and the failure of 327 intensive and 102 transect survey visits to detect marbled murrelet activity in the Bear River Study Area strongly suggest that marbled murrelets do not use potential habitat located in the Study Area, There are a combination of habitat and environmental factors which may combine to make this area unsuitable for use by marbled murrelets.

Studies have indicated that in California the marbled murrelet is closely associated with the remaining old-growth redwood ***(Sequoia sempervirens)*** stands (Paton and Ralph, 1988, 1990; Ralph et al., 1990). Miller and Ralph (in press) found that coastal stands dominated by Douglas fir and Sitka spruce ***(Picea sitchensis)*** lack marbled murrelets for some unknown reason and inland Douglas-fir dominated stands were often in drier areas with higher summer temperatures. The old growth stands within the Study Area are dominated by Douglas-fir and white fir and there are no known old growth redwood stands in the Study Area. In fact, with the exception of a small stand of second growth redwood on the top of Monument Ridge and several individual scattered redwood trees in Section 3, TlS, RIW, there are no other known redwood trees in the entire Study Area.

The coastal edge of the Bear River Study Area is topographically divided in half by Cape Mendocino, which is the western-most land mass in the Pacific Northwest. The Cape is thought to be at least partially responsible for the unusually turbulent and dynamic wind and weather patterns which are common in the Bear River Study Area, and people who live or work in this area have attested to the severity of the weather conditions (Blackwell, Graham, Kleiner, McBride, Russ, pers. comm.). Extreme fluctuations in temperature and precipitation are common occurrences, and high winds (>50 mph) are normal through much of the area at all seasons of the year.

Miller and Ralph (in press found that within large old growth stands most of the observations of occupied marbled murrelet behavior occurred in major drainages at low elevations. The only large, low elevation drainages in the the Bear River Study Area are the main stems of Bear River and South Fork Bear River. No potential marbled murrelet nesting habitat was identified near the South Fork Bear River and the the only such habitat along the main stem of Bear River consists of two stands in its upper reaches north of Rainbow Peak. Both of these stands were intensively surveyed with no detections, and the largest stand was reviewed by the California Department of Fish and Game and received a “no take” determination based on the survey data (Marbled Mm-relet Consultation #93SPH26).

The failure to locate marbled mm-relet activity during comprehensive surveys, the absence of old growth redwood stands, the severe weather conditions, the steep topography, and the fragmented habitats and accompanying high populations of nest predators which occur within the Bear River Study Area are factors which, when taken together, strongly suggest that marbled murrelets do not use habitat within the Study Area. We have concluded that management activities which alter

the structure or quantity of forest habitats in the Bear River Study Area are not likely to adversely affect the marbled murrelet.

## REFERENCES CITED


Blackwell, William. Sierra Pacific Industries. Samoa Road, Arcata, California. 95521.

Burkett, Esther. California Department of Fish and Game, Wildlife Management Division. 1416 Ninth Street, Sacramento, CA. 95814.

Carter, H. R. and R. A. Erickson. 1988. Population status and conservation problems of the Marbled Mm-relet in California, 1892-1987. Calif. Dept. of Fish and Game, Nongame Bird and Mammal Section, Sacramento, CA. Job II.B.2 74 pp.

Carter, H. R. and S. G. Sealy. 1986. Year-round use of coastal lakes by Marbled Mm-relets. Condor 88:473-477.

Chinnici, Sal. Scotia Pacific Holding Company, P.O. Box 712, Scotia, CA. 95565.

Graham, Brian. Western Timber Services. P.O. Box 1136, Arcata, CA. 95531.

Hamer, T. E. and E. B. Cummins. 1990. Forest habitat relationships of marbled murrelets in northwestern Washingtion. Unpublished report, Wildlife Management Division, Nongame Program, Washington Department of Wildlife, Olympia, WA. 57 pp.

Hamer, T. E., E. B. Cummins and W. P. Ritchie. 1991. Relationships between forest characteristics and use of inland site by marbled murrelets in northwestern Washingtion. Unpublished report, Wildlife Management Division, Nongame Program, Washington Department of Wildlife, Olympia, WA. 47 pp.

Hewitt, Rob. Natural Resources Management Corp. 1434 3rd Street, Eureka, CA. 95501.

Horton, Michael. United States Fish and Wildlife Service, Sacramento Field Office. 2800 Cottage Way, Room E 1803, Sacramento, CA. 95825- 1846.

Kleiner, William. Western Timber Services. P.O. Box 1136, Arcata, CA 95531.

Leisten, Gregory. Pacific Northwestern Biological. P.O. Box 150, Trinidad, CA. 95570.

LeValley, Ron. Mad River Biologists. 1696 Ocean Drive, McKinleyville, CA. 95521.

Long, Linda. Redwood Sciences Laboratory. 1700 Bayview, Arcata, CA. 95521.

McBride, William. P. O. Box 608, Ferndale, CA. 95536.

Miller, Sherri. Redwood Sciences Laboratory. 1700 Bayview, Arcata, CA. 95521.

Miller, S. L and C. J. Ralph. Relationship of Marbled Mm-relets with habitat and vegetation characteristics in California (in press).

Moore, Ken. California Department of Fish and Game, 619 2nd Street, Eureka, CA. 95501.

Nelson, S. K. 1989. Development of inventory techniques for surveying for marbled murrelets ***(Brachyramphus marmoratus)*** in the central Oregon Coast Range. Report to the Nongame Program, Oregon Department of Fish and Wildlife, P.O. Box 59, Portland, OR. Publ. No. 88-6-01.

Nelson, S. K. 1990. Distribution of the marbled murrelet in western Oregon. Report to the Nongame Program, Oregon Department of Fish and Wildlife, P.O. Box 59, Portland, OR. Publ. No. 89-9-02.

Nielsen, David. Pacific Northwestern Biological. P.O. Box 150, Trinidad, CA. 95570.

Paton, P. W. C. and C. J. Ralph. 1990. Distribution of the Marbled Murrelet at inland sites in California. Northwestern Naturalist 71:72-84.

Ralph, C. J. Redwood Sciences Laboratory. 1700 Bayview, Arcata, CA. 95521.

Ralph, C. J. and S .L. Miller. Offshore population estimates of Marbled Murrelets in California (in press).

Ralph, C. J., S. L. Miller, N. L. Naslund, B. O'Donnell, P. W. C. Paton and J. Seay. 1990. Marbled Murrelet research during 1989 in northern and central California. Unpublished interim report, United States Department of Agriculture, Forest Service, Redwood Science Laboratory, Arcata, CA. 95521.

Russ, Joseph (IV). 655 Bear River Road, Ferndale, CA. 95536.

Sealy, S. G. and H. R. Carter. 1984. At-sea distribution and nesting habitat of the Marbled Murrelet in British Columbia: problems in the Conservation of a solitary nesting seabird, pp. 737-756. In: J. P. Croxall, P. G. H.Evans and R. W. Schreiber (eds.), Status and Conservation of the World's Seabirds. ICBP Technical Publication No. 2.

Self, Steve. Sierra Pacific Industries. P.O. Box 496014, Redding, CA. 96049-6014.

Strong, Craig. Crescent Coastal Research. 7700 Bailey Road, Crescent City, CA. 95531.

# APPENDIX I

## SUMMARY OF FINDINGS FROM 13 APRIL 1994 FIELD REVIEW OF THE BEAR RIVER STUDY AREA

**PACIFIC NORTHWESTERN BIOLOGICAL**
P.O. Box 150. Trinidad, **California 95570-0150 - Phone or** Fax: **(707)** 8394643

May 31, 1994

Michael J. Horton
Fish and Wildlife Biologist
Sacramento Field Office
2800 Cottage Way, Room E - 1823
Sacramento, CA 95825- 1846

Dear Mr. Horton:

Re: Bear River/Mattole River Marbled Murrelet Study

'Ihe purpose of this letter is to summarize the findings of our April 13, 1994 field trip through the Singley Creek, Davis Creek, Bear River and the North Fork of the Mattole River watersheds (coIlectively referred to as the "Bear River Study Area"). Some of these findings are related to observations and habitat validations which occurred during the field trip, and some of these findings are related to information which **needs to** be generated before a biological opinion can be formulated regarding the likelihood of take, and these findings are listed accordingly.

**Conclusions From Field Trip:**

1. The majority of the habitats reviewed during the field trip were considered unsuitable for marbled murrelet nesting habitat. Fifty-four percent of the Bear River Study Area is pastures, prairies and brush fields, and much of the remaining habitat is early to mid-seral stage forest. Stands with late seral habitat components tended to be highly fragmented, with open to sparse canopies and harsh microhabitats.

2. The Singley Creek timber **stand,** located approximately. 2 miles west of the Pacific Ocean, had the best individual tree structure and stand structure of any of the potential marbled murrelet nesting habitat reviewed. This stand was surveyed for marbled **murrelets in** 1992 and 1993, and after a consultation with the California Department of Fish and Game, it was concluded that it is unlikely that marbled murrelets use this stand.

3. The Davis Creek timber stands which were surveyed in 1993 have potential marbled murrelet nesting structure and these stands should be surveyed again during the 1994 season.

4. The area north of Long Ridge identified as "Stand A" (see attached map) has potential marbled murrelet nesting structure and this stand should be surveyed for marbled murrelets.

5. There have been 273 intensive marbled murrelet survey visits and 102 transect station visits within the study area, but none of the intensive survey visits were conducted in the corridor along the main stem of Bear River. The main stem corridor should be sampled.

**Conclusions Regarding Information Needs (Work Plan):**

1. The off-shore survey effort needs to be quantified. Available data on the number of transects run and the dates run should be provided.

2. The second year of the intensive survey at Davis Creek shall be completed during the 1994 season in accordance with the "Methods For Surveying For Marbled Murrelets in Forests: A Protocol For Land Management And Research*' (Pacific Seabird Group Marbled Murrelet Technical Committee, 1994).

3. Prior to the field review, Scotia Pacific set up an intensive marbled murrelet survey in "Stand A." Scotia Pacific proposed to run each station in "Stand A" four times during the 1994 survey season. The proposed survey protocol was discussed after the field trip and it was suggested that each station should be visited at least once during the last three weeks of July.

4. Three survey stations shall be established along the main stem of Bear River, and each of these stations shall be surveyed two times; once in May and once in the last two weeks of July. The station locations agreed on are shown on the attached **maps.**

We also discussed the possibility of obtaining off-shore commercial catch records for marbled murrelet prey species, but Ken Moore recently told me that this data does not exist for the area off shore of the study area. It is my understanding that Ken discussed this with you and it is no longer necessary to follow up on this issue.

Upon completion of the proposed work plan, a comprehensive report will be submitted which addresses marbled murrelet habitat distribution within the study area, and off-shore and on-shore marbled murrelet survey efforts and results. It was generally agreed that if the above described work plan was completed without marbled murrelet detections, the Department of Fish and Game (DFG) and the Fish and Wildlife Service (USFWS) would consider the survey effort in the Bear River Study Area to be adequate for the purpose of making a determination on the likelihood of take. It was further agreed that if marbled murrelets are detected during the current year's surveys, we will need to consult with DFG and USFWS to evaluate the detection data and determine if additional surveys are needed.

Additionally, **it** was agreed that there was insufficient survey data from the "North Fork of the Mattole Study Area" to make any determinations about marbled murrelet use in that area. Consultations with DFG will be required whenever management activities are likely to affect potential marbled murrelet habitat located in this study area.

Our efforts to accomplish the above described work plan are under way, so please contact us if your understanding of the work plan differs from what is described herein. I can be reached at the number listed above or at my home phone which **is (707)** 839-1035.

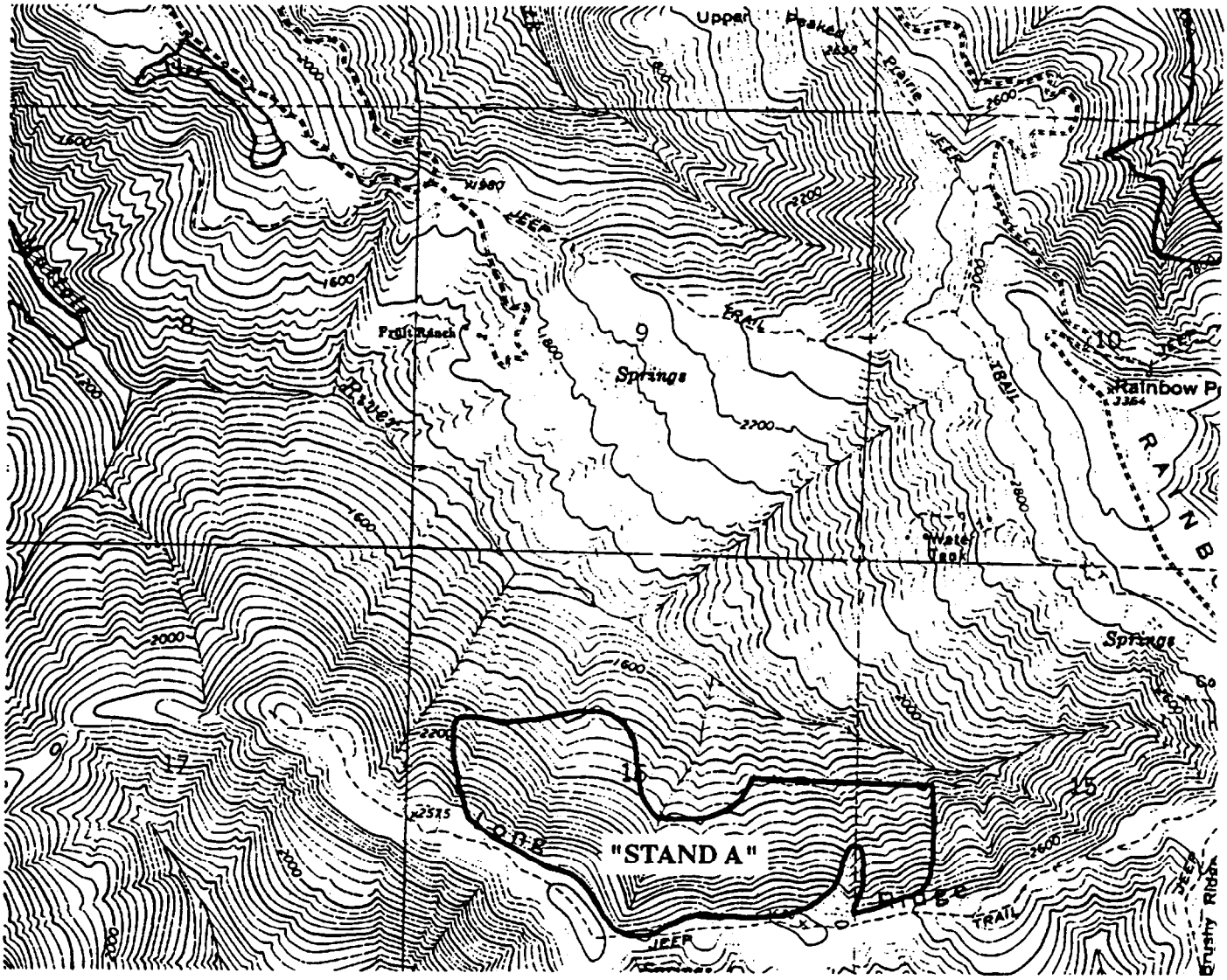
Sincerely,

David W. Nielsen
Consulting Biologist

cc: Bill Blackwell, Sierra Pacific Industries
Sal Chinnici, Scotia Pacific
Bill Kleiner, Western Timber Services
Ken Moore, CA Dep't of Fish and Game
Steve Self, Sierra Pacific Industries

attachments

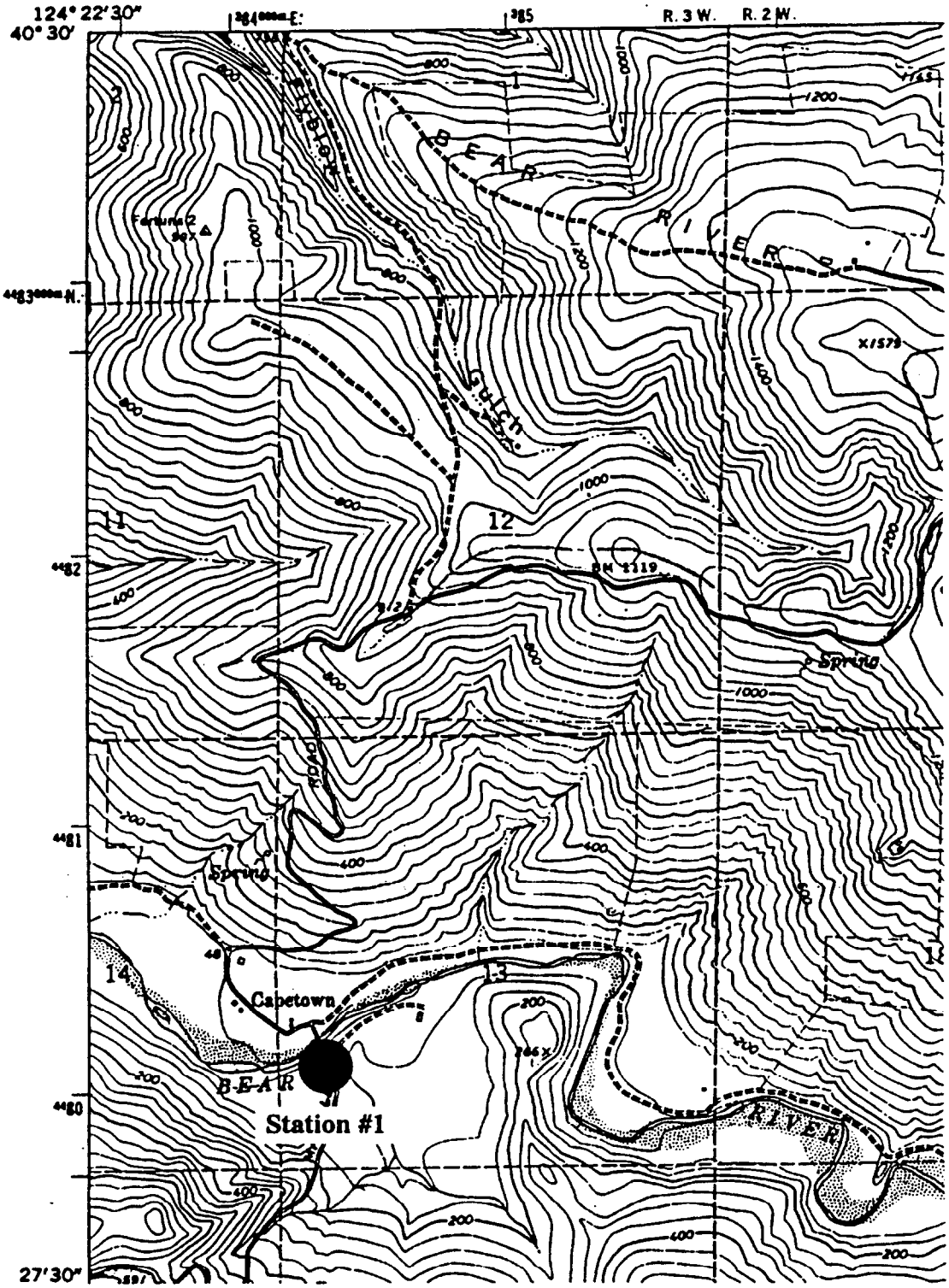
# “STAND A” LOCATION MAP




**Scanned from Taylor Peak USGS 7.5 Minute Quadrangle**

**Scale: 1” = 2,000’**

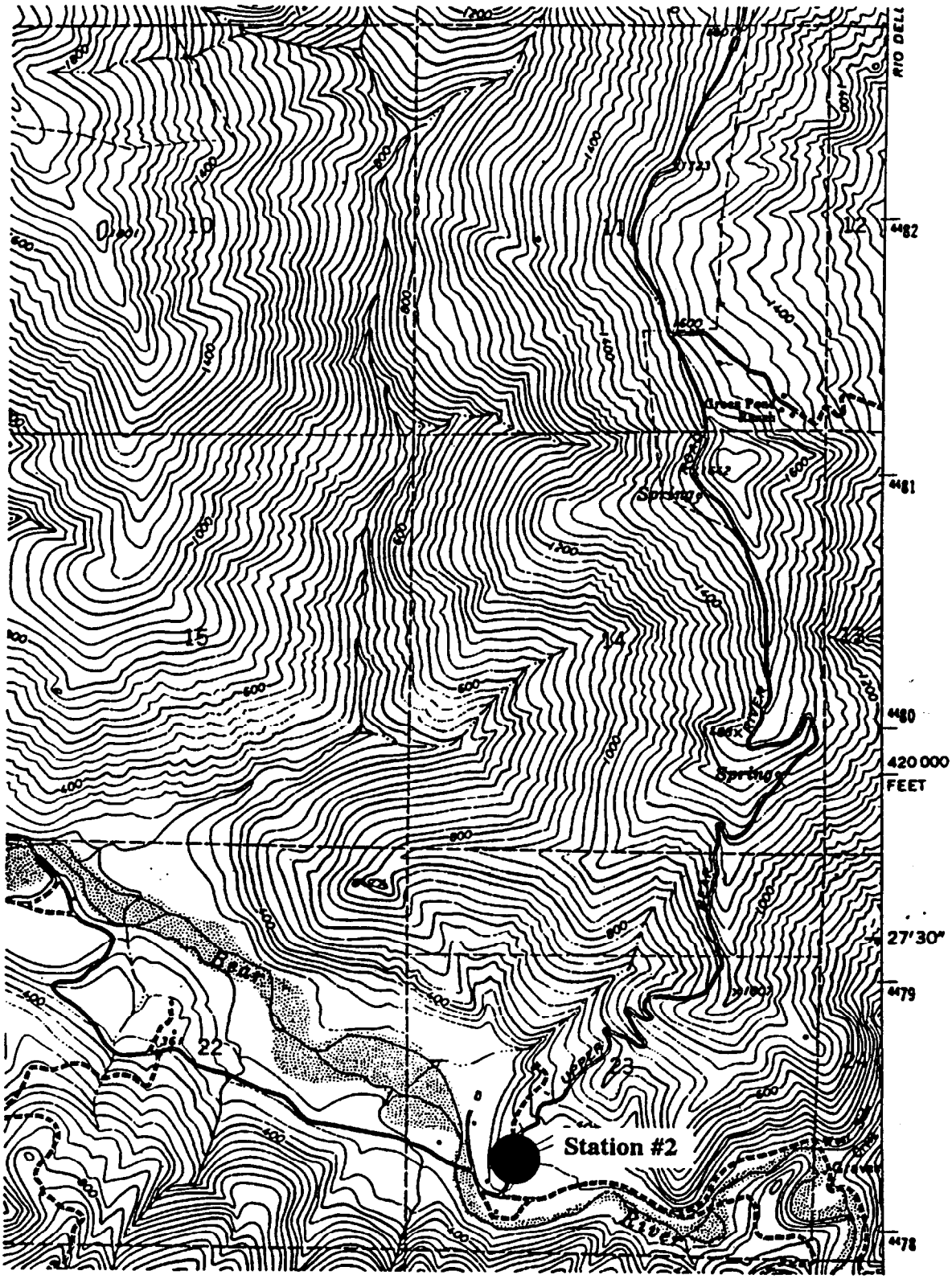
# Bear River MAMU Survey Station Map




**Scanned from Capetown USGS 7.5 Minute Quadrangle**

**Scale: 1" = 2,000**

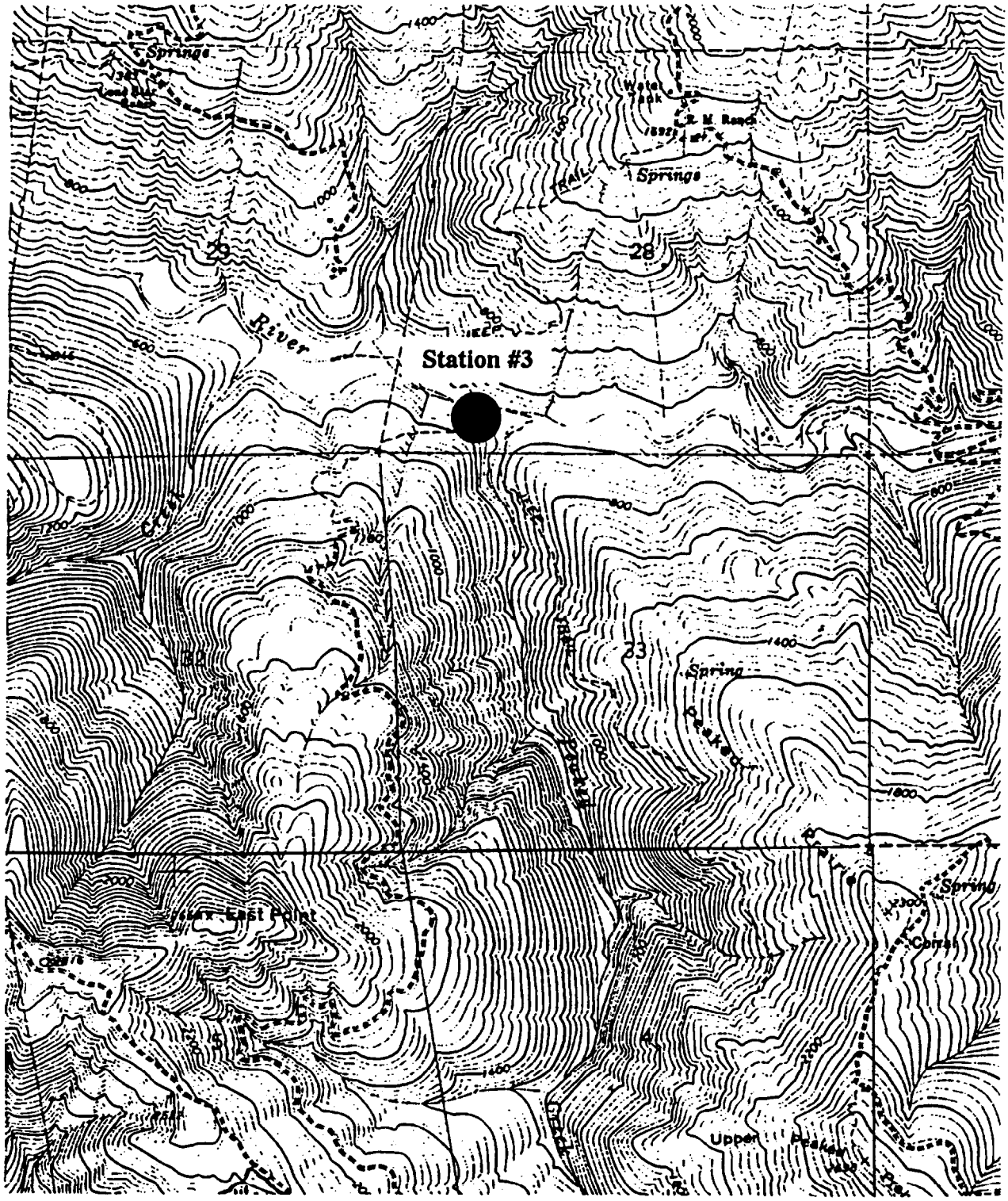
# Bear River MAMU Survey Station Map




**Scanned from Capetown USGS 7.5 Minute Quadrangle**

**scale: 1"=2,ooo**

# Bear River MAMU Survey Station Map




**Scanned from Taylor Peak USGS 7.5 Minute Quadrangle**

**scale: 1" = 2,000'**

# APPENDIX II

# CALIFORNIA DEPARTMENT OF FISH AND GAME

# MARBLED MURRELET DATABASE REPORT

# FOR THE

# BEAR RIVER STUDY AREA

# STATE OF CALIFORNIA - THE RESOURCES AGENCY

**Department of Fish and Game**
**Wildlife Management Division**
**1416 Ninth Street**
**Sacramento, CA 95814**

**Phone Number: (916) 653-7203**

## FAX TRANSMITTAL

DATE December 10 1993 PAGE 1 OF 11

TO Dave Nielsen

PHONE NUMBER (916) 839-4643

FAX NUMBER (916) 839-4643

FROM Esther Burkett WMD

PHONE NUMBER (916) 654-4273

FAX NUMBER (916) 6534019

MESSAGE Marbled Murrelet printout from the CDFG data base, showing all records from the Bear & Mattole River drainages and Singley Creek.

Mattole River Drainage p.1 of 3



| OCC_NUMB | MAININFO | ELM-DATE | RADIUS | TRANSECT | STATION_NO | UTM_N | UTM_E |
|---|---|---|---|---|---|---|---|
| 0361 | PATON & RALPH, 1988 | 19880709 | SS | GLAW | 02 | 4476550 | 413410 |
| 0362 | PATON & RALPH, 1988 | 19880708 | SS | MOCR | 05 | 4478600 | 406390 |
| 0363 | PATON & RALPH, 1988 | 19880708 | SS | MOCR | 06 | 4478800 | 406380 |
| 0395 | PATON & RALPH, 1988 | 19880731 | SS | MILL | 01 | 4461460 | 389960 |
| 0464 | SOWLS ET AL., 1980 | 19790718 | MP | | | 4441950 | 399300 |
| 0465 | SOWLS ET AL., 1980 | 19790719 | MP | | | 4425790 | 413850 |
| 0467 | SOWLS ET AL., 1980 | 19790719 | TP | | | 4415790 | 420550 |
| 1028 | CARTER & ERICKSON, 1988 | 19820424 | AP | | | 4417040 | 419910 |
| 1476 | RALPH ET AL., 1990 | 19890824 | ss | CAPE | 05 | 4478550 | 383300 |
| 1657 | RALPH ET AL., 1992 | 19911000 | TP | FCCM | | 4481270 | 391200 |
| 1659 | RALPH ET AL., 1992 | 19920900 | TP | FCCM | | 4483100 | 381800 |
| 1660 | RALPH ET AL., 1992 | 19920900 | TP | FCCM | | 4481270 | 381200 |
| 1661 | RALPH ET AL., 1992 | 19920900 | TP | CMPG | | 4475970 | 380150 |
| 1662 | RALPH ET AL., 1992 | 19920900 | TP | CMPG | | 4468950 | 383300 |
| 1663 | RALPH ET AL., 1992 | 19920900 | TP | CMPG | | 4459950 | 383450 |
| 1664 | RALPH ET AL., 1992 | 19920900 | TP | CMPG | | 4458100 | 383260 |
| 1665 | RALPH ET AL., 1992 | 19920900 | TP | CMPG | | 4456200 | 384060 |
| 1670 | RALPH ET AL., 1992 | 19910900 | TP | PGSC | | 4446100 | 395700 |
| 1671 | RALPH ET AL., 1992 | 19910900 | TP | PGSC | | 4444100 | 397020 |
| 1678 | RALPH ET AL., 1992 | 19920900 | TP | PGSC | | 4447660 | 394020 |
| 1679 | RALPH ET AL., 1992 | 19920900 | TP | PGSC | | 4446100 | 395700 |
| 1680 | RALPH ET AL., 1992 | 19920900 | TP | PGSC | | 4444100 | 397020 |
| 1681 | RALPH ET AL., 1992 | 19920900 | TP | PGSC | | 4440350 | 401830 |
| 1684 | RALPH ET AL., 1992 | 19910900 | TP | SCCV | | 4421650 | 416470 |
| 1685 | RALPH ET AL., 1992 | 19910900 | TP | SCCV | | 4417070 | 419900 |
| 1686 | RALPH ET AL., 1992 | 19920800 | TP | SCCV | | 4427150 | 412850 |



Sorted on occurrence number

Mattole River Drainage p. 2 of 3



| OCC_NUMB | QUAD | LOCALE | TOWNSHIP | RANGE | SECTION | Q_SECT | NO_OBSV | UNIT_MEAS |
|---|---|---|---|---|---|---|---|---|
| 0361 | SCOTIA | GREENLOW CREEK | 1N | 1E | 25 | SENWSW | 1-4 | 10MIN |
| 0362 | SCOTIA | MONUMENT CREEK | 1N | 1E | 19 | SWSENE | 1-4 | 10MIN |
| 0363 | SCOTIA | MONUMENT CREEK | 1N | 1E | 19 | NWSENE | 1-4 | 10MIN |
| 0395 | PETROLIA | MILL CREEK | 2s | 2W | 16 | NESWNE | 1-4 | 10MIN |
| 0464 | SHUBRICK PEAK | BIG FLAT | | | | | 1 | |
| 0465 | BEAR HARBOR | POINT NO PASS | | | | | 1 | |
| 0467 | BEAR HARBOR | JACKSON PINNACLE | | | | | 6 | 37KM |
| 1028 | BEAR HARBOR | BEAR HARBOR | | | | | 24 | |
| 1476 | CAPE MENDOCINO | CAPE RIDGE | 1N | 3w | 23 | SENESW | 1 | 10MIN |
| 1657 | CAPE MENDOCINO | BEAR RIVER | | | | | 2 | 1.9KM |
| 1659 | CAPE MENDOCINO | NORTH BEAR RIVER | | | | | 11 | 1.9KM |
| 1660 | CAPE MENDOCINO | BEAR RIVER | | | | | 6 | 1.9KM |
| 1661 | CAPE MENDOCINO | SOUTH BEACH ROCK | | | | | 2 | 1.9KM |
| 1662 | PETROLIA | DOMINGO CREEK | | | | | 1 | 1.9KM |
| 1663 | PETROLIA | MATTOLE BEACH | | | | | 13 | 1.9KM |
| 1664 | PETROLIA | NRTH PUNTA GORDA | | | | | 5 | 1.9KM |
| 1665 | PETROLIA | STH PUNTA GORDA | | | | | 21 | 1.9KM |
| 1670 | SHUBRICK PEAK | NORTH BIG CREEK | | | | | 14 | 1.9KM |
| 1671 | SHWRICK PEAK | SHUBRICK PEAK | | | | | 12 | 1.9KM |
| 1678 | SHUBRICK PEAK | SOUTH OAT CREEK | | | | | 3 | 1.9KM |
| 1679 | SHUBRICK PEAK | NORTH BIG CREEK | | | | | 2 | 1.9KM |
| 1680 | SHUBRICK PEAK | SHUBRICK PEAK | | | | | 3 | 1.9KM |
| 1681 | SHUBRICK PEAK | SHIPMAN CREEK | | | | | 3 | 1.9KM |
| 1684 | BEAR HARBOR | NEEDLE ROCK | | | | | 2 | 1.9KM |
| 1685 | BEAR HARBOR | SEAL ROCKS | | | | | 5 | 1.9KM |
| 1686 | BEAR HARBOR | CHAMISAL MOUNTN | | | | | 2 | 1.9KM |



Sorted on occurrence number

Mattole River Drainage p. 2 of 5



| OCC_NUMB | OBS_TYPE | GEN_COM |
|---|---|---|
| 0361 | DT | TRANSECT DT TOTAL=1. |
| 0362 | DT | TRANSECT DT TOTAL=2. |
| 0363 | DT | TRANSECT DT TOTAL=2. |
| 0395 | DT | TRANSECT DT TOTAL= 1. |
| 0464 | OF | OFF BIG FLAT. |
| 0465 | OF | POINT NO PASS. |
| 0467 | OF | SHELTER COVE TO JUAN CREEK. |
| 1028 | OF | BEAR HARBOR. IN PAIRS. |
| 1476 | DT | TRANSECT DT TOTAL=2. |
| 1657 | OF | SEGMENT 3 |
| 1659 | OF | SEGMENT 2 |
| 1660 | OF | SEGMENT 3 |
| 1661 | OF | SEGMENT 2 |
| 1662 | OF | SEGMENT 6 |
| 1663 | OF | SEGMENT 11 |
| 1664 | OF | SEGMENT 12 |
| 1665 | OF | SEGMENT 13 |
| 1670 | OF | SEGMENT 7 |
| 1671 | OF | SEGMENT 8 |
| 1678 | OF | SEGMENT 6 |
| 1679 | OF | SEGMENT 7 |
| 1680 | OF | SEGMENT 8 |
| 1681 | OF | SEGMENT 10 |
| 1684 | OF | SEGMENT 6 |
| 1685 | OF | SEGMENT 9 |
| 1686 | OF | SEGMENT 2 |



Sorted on occurrence number

Bear River and Singley Creek Drainages p.1 of 7



| SCC_NUMB | MAININFO | ELM_DATE | RADIUS | TRANSECT | STATION_NO | UTM_N | UTM_E |
|---|---|---|---|---|---|---|---|
| 0111 | PATON & RALPH, 1988 | 19880726 | ss | GRCR | 01 | 4481650 | 418440 |
| 0112 | PATON & RALPH, 1988 | 19880726 | ss | GRCR | 02 | 4481250 | 418500 |
| 0113 | PATON & RALPH, 1988 | 19880726 | ss | GRCR | 03 | 4480810 | 416630 |
| 0114 | PATON & RALPH, 1988 | 19880726 | ss | GRCR | 04 | 4480850 | 419890 |
| 0115 | PATON & RALPH, 1988 | 19880726 | ss | GRCR | 07 | 4481020 | 422040 |
| 0116 | PATON & RALPH, 1988 | 19880726 | ss | GRCR | 08 | 4481330 | 422720 |
| 0117 | PATON & RALPH, 1988 | 19880726 | ss | GRCR | 09 | 4482050 | 423340 |
| 0118 | PATON & RALPH, 1988 | 19880726 | ss | GRCR | 10 | 4481840 | 423990 |
| 0119 | PATON & RALPH, 1988 | 19880802 | ss | LOPR | 01 | 4467040 | 416240 |
| 0120 | PATON & RALPH, 1988 | 19880802 | ss | LOPR | 02 | 4467410 | 416290 |
| 0121 | PATON & RALPH, 1988 | 19880802 | ss | LOPR | 03 | 4467720 | 416250 |
| 0122 | PATON & RALPH, 1988 | 19880802 | SS | LOPR | 04 | 4467960 | 416190 |
| 0123 | PATON & RALPH, 1988 | 19880802 | ss | LOPR | 05 | 4468090 | 416450 |
| 0284 | PATON & RALPH, 1988 | 19880505 | SS | GRIZ | 0 1 | 4481940 | 423460 |
| 0285 | PATON & RALPH, 1988 | 19880505 | ss | GRIZ | 02 | 4481800 | 423710 |
| 0352 | PATON & RALPH, 1988 | 19880725 | ss | RDFD | 04 | 4470290 | 421570 |
| 0353 | PATON & RALPH, 1988 | 19880725 | ss | RDFD | 05 | 4469700 | 421600 |
| 0354 | PATON & RALPH, 1988 | 19880725 | ss | RDFD | 06 | 4469110 | 421570 |
| 0355 | PATON & RALPH, 1988 | 19880725 | ss | RDFD | 07 | 4468600 | 421950 |
| 0356 | PATON & RALPH, 1988 | 19880725 | ss | RDFD | 09 | 4467590 | 421'780 |
| 0357 | PATON & RALPH, 1988 | 19880725 | ss | RDFD | 10 | 4467040 | 421440 |
| 0358 | PATON & RALPH, 1988 | 19880802 | ss | BTSF | 06 | 4466650 | 418990 |
| 0359 | PATON & RALPH, 1988 | 19880802 | ss | BTSF | 1 0 | 4467040 | 421000 |
| 0361 | PATON & RALPH, 1988 | 19880709 | ss | GLAW | 02 | 4476550 | 413410 |
| 0362 | PATON & RALPH, 1988 | 19880708 | ss | MOCR | 05 | 4478600 | 406390 |
| 0363 | PATON & RALPH, 1988 | 19880708 | ss | MOCR | 06 | 4478800 | 406380 |
| 0367 | PATON & RALPH, 1988 | 19880807 | ss | BITR | 02 | 4467030 | 415380 |
| 0369 | PATON & RALPH, 1988 | 19880807 | SS | BTTR | 03 | 4467070 | 414850 |
| 0391 | PATON & RALPH, 1988 | 19880730 | ss | PEPP | 04 | 4477070 | 416530 |
| 0392 | PATON & RALPH, 1988 | 19880730 | ss | PEPP | 05 | 4476080 | 416580 |
| $0468 | SOWLS ET AL., 1980 | 19790726 | AP | | | 4484970 | 381760 |
| 0695 | CARTER ET AL., 3.992 | 19890526 | TP | | | 4496060 | 387100 |
| $1007 | AMERICAN BIRD FILES | 19811014 | AP | | | 4497500 | 387650 |



Sorted on occurrence number

Bear River and Singley Creek Drainages p. 2 of 1



| OCC_NUMB | MAININFO | ELM-DATE | RADIUS | TRANSECT | STATION_NO | UTM_N | UTM_E |
|---|---|---|---|---|---|---|---|
| 1167 | CARTER & ERICKSON, 1988 | 19870627 | AP | | | 4483400 | 416350 |
| 1169 | CARTER & ERICKSON, 1988 | 19730428 | AP | | | 4482030 | 423750 |
| 1170 | CARTER & ERICKSON, 1988 | 19760508 | AP | | | 4482030 | 423750 |
| 1171 | CARTER & ERICKSON, 1988 | 19841104 | AP | | | 4482030 | 423750 |
| 1172 | CARTER & ERICKSON, 1988 | 19870814 | AP | | | 4482030 | 423750 |
| 1355 | CARTER & ERICKSON, 1988 | 19790913 | AP | | | 4467330 | 421200 |
| 1395 | PACIFIC LUMBER CO | 19920611 | ss | CHAD | 01 | 4471910 | 420090 |
| 1396 | PACIFIC LUMBER CO | 19920611 | ss | CHAD | 03 | 4471370 | 419750 |
| 1397 | PACIFIC LUMBER CO | 19920705 | ss | CHAD | 05 | 4471580 | 420400 |
| 1398 | PACIFIC LUMBER CO | 19920705 | ss | CHAD | 06 | 4470690 | 419710 |
| 1469 | RALPH ET AL., 1990 | 19890729 | ss | HONE | 03 | 4457160 | 406800 |
| 1470 | RALPH ET AL., 1990 | 19890729 | ss | HONE | 04 | 4457850 | 407750 |
| 1471 | RALPH ET AL., 1990 | 19890811 | ss | HONE | 05 | 4457910 | 408550 |
| 1472 | RALPH ET AL., 1990 | 19890729 | ss | HONE | 07 | 4458800 | 408850 |
| 1473 | RALPH ET AL., 1990 | 19890729 | ss | HONE | 08 | 4459340 | 409510 |
| 1474 | RALPH ET AL., 1990 | 19890807 | ss | FERN | 06 | 4467750 | 392300 |
| 1475 | RALPH ET AL., 1990 | 19890824 | ss | CAPE | 01 | 4479970 | 384340 |
| 1476 | RALPH ET AL., 1990 | 19890824 | ss | CAPE | 05 | 4478550 | 383300 |
| 1653 | RALPH ET AL., 1992 | 19920900 | TP | SJFC | | 4494570 | 385680 |
| 1654 | RALPH ET AL., 1992 | 19920900 | TP | SJFC | | 4490700 | 384150 |
| 1655 | RALPH ET AL., 1992 | 19920900 | TP | SJFC | | 4488900 | 383460 |
| 1656 | RALPH ET AL., 1992 | 19920900 | TP | SJPC | | 4487140 | 382650 |
| 1657 | RALPH ET AL., 1992 | 19911000 | TP | FCCM | | 4481270 | 381200 |
| 1658 | RALPH ET. AL., 1992 | 19920900 | TP | FCCM | | 4485100 | 381850 |
| 1659 | RALPH ET AL., 1992 | 19920900 | TP | FCCM | | 4483100 | 381800 |
| 1660 | RALPH ET AL., 1992 | 19920900 | TP | FCCM | | 4481270 | 381200 |
| 1661 | RALPH ET AL., 1992, | 19920900 | TP | CMPG | | 4475970 | 380150 |



Sorted on occurrence number

Bear River and Singley Creek Drainages p. 3 of 7



p.7

| OCC_NUMB | QUAD | LOCALE | TOWNSHIP | RANGE | SECTION | Q_SECT | NO_OBSV | UNIT_MEAS |
|---|---|---|---|---|---|---|---|---|
| 0111 | REDCREST | VN DUZN/GRZZL CK | 1N | 2E | 09 | NENWSW | 1-4 | 10MIN |
| 0112 | REDCREST | VN DUZN/GRZZL CK | 1N | 2E | 09 | NESWSW | 1-4 | 10MIN |
| 0113 | REDCREST | VN DUZN/GRZZL CK | 1N | 2E | 16 | NWNENW | 1-4 | 10MIN |
| 0114 | REDCREST | VN DUZN/GRZZL CK | 1N | 2E | 15 | NWNWNW | 1-4 | 10MIN |
| 0115 | REDCREST | VN DUZN/GRZZL CK | 1N | 2E | 11 | NWSESW | 1-4 | 10MIN |
| 0116 | REDCREST | VN DUZN/GRZZL CK | 1N | 2E | 11 | SWNESE | 1-4 | 10MIN |
| 0117 | REDCREST | VN DUZN/GRZZL CK | 1N | 2E | 12 | SENWNW | 1-4 | 10MIN |
| 0118 | REDCREST | VN DUZN/GRZZL CK | 1N | 2E | 12 | NWSWNE | 1-4 | 10MIN |
| 0119 | WEOTT | LOOK PRAIRIE | 1S | 2E | 29 | SWSWNW | 1-4 | 10MIN |
| 0120 | WEOTT | LOOK PRAIRIE | 1S | 2E | 29 | SWNWNW | 1-4 | 10MIN |
| 0121 | WEOTT | LOOK PRAIRIE | 1S | 2E | 20 | SWSWSW | 1-4 | 10MIN |
| 0122 | WEOTT | LOOK PRAIRIE | 1S | 2E | 19 | NESESE | 1-4 | 10MIN |
| 0123 | WEOTT | LOOK PRAIRIE | 1S | 2E | 20 | NESWSW | 1-4 | 10MIN |
| 0284 | REDCREST | GRIZZLY CREEK SP | 1N | 2E | 12 | SENWNW | 3 | |
| 0285 | REDCREST | GRIZZLY CREEK SP | 1N | 2E | 12 | NWSENW | 3 | |
| 0352 | REDCREST | AVE OF THE GIANT | 1S | 2E | 14 | NESWNW | 1-4 | 10MIN |
| 0353 | REDCREST | AVE OF THE GIANT | 1S | 2E | 14 | SENWSW | 1-4 | 10MIN |
| 0354 | WEOTT | MORTON GROVE | 1S | 2E | 23 | NENWNW | 1-4 | 10MIN |
| 0355 | WEOTT | KRAUSS GROVE | 1S | 2E | 23 | SESENW | 1-4 | 10MIN |
| 0356 | WEOTT | DYERVILLE SITE | 1S | 2E | 26 | NWNENW | 5+ | 10MIN |
| 0357 | WEOTT | FOUNDERS GROVE | 1S | 2E | 26 | NESWNW | 1-4 | 10MIN |
| 0358 | WEOTT | BULL CK FLAT | 1s | 2E | 28 | SENWSE | 1-4 | 10MIN |
| 0359 | WEOTT | FOUNDERS GROVE | 1S | 2E | 27 | NESENE | 1-4 | 10MIN |
| 0361 | SCOTIA | GREENLOW CREEK | 1N | 1E | 25 | SENWSW | 1-4 | 10MIN |
| 0362 | SCOTIA | MONUMENT CREEK | 1N | 1E | 19 | SWSENE | 1-4 | 10MIN |
| 0363 | SCOTIA | MONUMENT CREEK | 1N | 1E | 19 | NWSENE | 1-4 | 10MIN |
| 0367 | WEOTT | GOPHER CREEK | 1s | 2E | 30 | SESENW | 1-4 | 10MIN |
| 0368 | BULL CREEK | UPPER BULL CREEK | 1S | 2E | 30 | SWSENW | 1-4 | 10MIN |
| 0391 | REDCREST | PEPPERWOOD | 1N | 2E | 29 | NWSENW | 1-4 | 10MIN |
| 0392 | REDCREST | PEPPERWOOD | 1N | 2E | 29 | SWSWSW | 1-4 | 10MIN |
| 0468 | FERNDALE | FALSE CAPE ROCKS | | | | | 2 | |
| 0695 | FERNDALE | CUTOFF SLOUGH | | | | | 8 | 9.1KM |
| 1007 | FERNDALE | MORGAN SLOUGH | | | | | 17 | |

DEC 10 '93 04:17PM DEPT. OF FISH & GAME

Sorted on occurrence number

Bear River and Singley Creek Drainages p. 4 of 7



| OCC_NUMB | QUAD | LOCALE | TOWNSHIP | RANGE | SECTION | Q_SECT | NO_OBSV | UNIT_MEAS |
|---|---|---|---|---|---|---|---|---|
| 1167 | REDCREST | RIVERSIDE PARK | | | | | 4 | |
| 1169 | REDCREST | GRIZ CK SP CAMPG | | | | | 2 | |
| 1170 | REDCREST | GRIZ CK SP CAMPG | | | | | 4 | |
| 1171 | REDCREST | GRIZ CK SP CAMPG | | | | | 2 | |
| 1172 | REDCREST | GRIZ CK SP CAMPG | | | | | 1 | 10SMIN |
| 1355 | WEOTT | ROCKEFELLER GRVE | | | | | 1 | |
| 1395 | REDCREST | S ENGLEWOOD | 1S | 2E | 10 | SWSENW | 1 | |
| 1396 | REDCREST | S ENGLEWOOD | 1S | 2E | 10 | SWNWSW | 2 | |
| 1397 | REDCREST | S ENGLEWOOD | 1s | 2E | 10 | NENESW | 3 | |
| 1398 | REDCREST | S ENGLEWOOD | 1s | 2E | 15 | SWNWNW | 4 | |
| 1469 | BULL CREEK | WINDY NIP GAP | 2S | 1E | 32 | SWNENW | 3 | 10MIN |
| 1470 | BULL CREEK | WINDY NIP GAP | 2S | 1E | 29 | NWSESE | 4 | 10MIN |
| 1471 | BULL CREEK | WINDY NIP GAP | 2S | 1E | 28 | SENESW | 1 | 10MIN |
| 1472 | BULL CREEK | CATHEYS PEAK | 2S | 1E | 28 | SENWNE | 3 | 10MIN |
| 1473 | BULL CREEK | CATHEYS PEAK | 2S | 1E | 22 | NWSWSW | 2 | 10MIN |
| 1474 | FERNDALE | FRANCIS CK HEAD | 2N | 2W | 23 | SWSWSW | 1 | 10MIN |
| 1475 | CAPETOWN | BEAR RIVER | 1N | 3W | 13 | NESWSW | 1 | 10MIN |
| 1476 | CAPE MENDOCINO | CAPE RIDGE | 1N | 3W | 23 | SENESW | 1 | 10MIN |
| 1653 | FERNDALE | CENTERVILLE SLGH | | | | | 2 | 1.9KM |
| 1654 | FERNDALE | FLEENER CREEK | | | | | 4 | 1.9KM |
| 1655 | FERNDALE | GUTHRIE CREEK | | | | | 7 | 1.9KM |
| 1656 | FERNDALE | NRTH MUSSEL ROCK | | | | | 4 | 1.9KM |
| 1657 | CAPE MENDOCINO | BEAR RIVER | | | | | 2 | 1.9KM |
| 1658 | FERNDALE | FALSE CAPE ROCK | | | | | 2 | 1.9KM |
| 1659 | CAPE MENDOCINO | NORTH BEAR RIVER | | | | | 11 | 1.9KM |
| 1660 | CAPE MENDOCINO | BEAR RIVER | | | | | 6 | 1.9KM |
| 1661 | CAPE MENDOCINO | SOUTH BEACH ROCK | | | | | 2 | 1.9KM |



Sorted on occurrence number

Bear River and Singley Creek Drainages p. 2 of 7


12/10/93

| OCC_NUMB | OBS_TYPE | GEN_COM |
|---|---|---|
| 0111 | DT | TRANSECT DT TOTAL=61. |
| 0112 | DT | TRANSECT DT TOTAL=61. |
| 0113 | DT | TRANSECT DT TOTAL=61. |
| 0114 | DT | TRANSECT DT TOTAL=61. |
| 0115 | DT | TRANSECT DT TOTAL=61. |
| 0116 | DT | TRANSECT DT TOTAL=61. |
| 0117 | DT | TRANSECT DT TOTAL=61. |
| 0118 | DT | TRANSECT DT TOTAL=61. |
| 0119 | DT | TRANSECT DT TOTAL=15. |
| 0120 | DT | TRANSECT DT TOTAL=15. |
| 0121 | DT | TRANSECT DT TOTAL=15. |
| 0122 | DT | TRANSECT DT TOTAL=15. |
| 0123 | DT | TRANSECT DT TOTAL=15. |
| 0284 | SC | A.M. COUNT TOTAL=3. REF TRANS NONE. |
| 0285 | SC | A.M. COUNT TOTAL=3. REF TRANS NONE. |
| 0352 | DT | TRANSECT DT TOTAL=31. |
| 0353 | DT | TRANSECT DT TOTAL=31. |
| 0354 | DT | TRANSECT DT TOTAL=31. |
| 0355 | DT | TRANSECT DT TOTAL=31. |
| 0356 | DT | TRANSECT DT TOTAL=31. |
| 0357 | DT | TRANSECT DT TOTAL=31. |
| 0358 | DT | TRANSECT DT TOTAL=7. |
| 0359 | DT | TRANSECT DT TOTAL=7. |
| 0361 | DT | TRANSECT DT TOTAL=1. |
| 0362 | DT | TRANSECT DT TOTAL=2. |
| 0363 | DT | TRANSECT DT TOTAL=2. |
| 0367 | DT | TRANSECT DT TOTAL=5. |
| 0368 | DT | TRANSECT DT TOTAL=5. |
| 0391 | DT | TRANSECT DT TOTAL=4. |
| 0392 | DT | TRANSECT DT TOTAL=4. |
| 0468 | OF | FALSE CAPE ROCKS. |

DEC 10 '93 04:18PM DEPT. OF FISH & GAME

Sorted on occurrence number

Bear River and Singley Creek drainage





| CC_NUMB | OBS_TYPE | GEN_COM |
|---|---|---|
| 0695 | OF | EEL RIVER MOUTH TO NAVAL O CENTER. |
| 1007 | OF | OFFSHORE EEL RIVER. |
| 1167 | FN | CHEATHAM GROVE. APDX REC 22.0. IN PAIRS, FLYING, CIRCLING, AND CALLING. |
| 1169 | FN | GRIZZLY CK RDWDS SP. APDX REC 27.0. CALLING BEFORE DAWN. |
| 1170 | FN | GRIZZLY CK RDWDS SP. APDX REC 27.2. IN PAIRS, CIRCLING AND CALLING. |
| 1171 | FN | GRIZZLY CK RDWDS SP. APDX REC 27.3. CALLING AND FLYING DOWNSTREAM AT 0630. |
| 1172 | FN | GRIZZLY CK RDWDS SP. APDX REC 27.4. CALLING AND FLYING 0530-0715. |
| 1355 | DY | HUMBOLDT RDWDS SP. DOWNY YG FND ON BULL CK RD, DIED IN JVL PLUM 19791020. HSUM 6752. |
| 1395 | DT | 1992:STATION TOTAL DT=1: 6/11=1. |
| 1396 | DT | 1992:STATION TOTAL DT=2: 6/11=2. |
| 1397 | OB | 1992:STATION TOTAL DT=5: 6/11=3, 7/5=2 (2 MURRELETS FLEW THROUGH CANOPY). |
| 1398 | OB | 1992:STATION TOTAL DT=4: 7/5=4 (1 MURRELET FLEW THROUGH CANOPY). |
| 1469 | DT | TRANSECT DT TOTAL=13. |
| 1470 | DT | TRANSECT DT TOTAL=13. |
| 1471 | DT | TRANSECT DT TOTAL=13. |



Sorted on occurrence number

Page No. 3
12/10/93

P.11

| OCC_NUMB | OBS_TYPE | GEN_COM |
|---|---|---|
| 1472 | DT | TRANSECT DT TOTAL=13. |
| 1473 | DT | TRANSECT DT TOTAL=13. |
| 1474 | DT | TRANSECT DT TOTAL=1. |
| 1475 | DT | TRANSECT DT TOTAL=2. |
| 1476 | DT | TRANSECT DT TOTAL=2. |
| 1653 | OF | SEGMENT 11 |
| 1654 | OF | SEGMENT 13 |
| 1655 | OF | SEGMENT 14 |
| 1656 | OF | SEGMENT 15 |
| 1657 | OF | SEGMENT 3 |
| 1658 | OF | SEGMENT 1 |
| 1659 | OF | SEGMENT 2 |
| 1660 | OF | SEGMENT 3 |
| 1661 | OF | SEGMENT 2 |

DEC 10 '93 04:19PM DEPT. OF FISH & GAME

Sorted on occurrence number

# APPENDIX III

# BEAR RIVER/MATTOLE RIVER

# MAMU SURVEY DATABASE

# BEAR RIVER/MATTOLE RIVER MAMU SURVEY DATABASE

**Run: 11/7/94**

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-01 | R-M1/7 | TPL | 4/23/92 | - | 5/13/92 | - | 6/17/92 | - | 7/8/92 | . | 7/8/93 | - | 7/15/93 | - | 7/29/93 | - | 8/5/93 | - | 2 | 26 | Y |
| B-02 | R-M1/1 | TPL | 4/23/92 | - | 5/5/92 | - | 5/13/92 | - | 6/17/92 | - | 6/16/93 | - | 7/8/93 | - | 7/16/93 | - | 7/29/93 | - | 3 | 15 | N |
| B-02 | R-M1/1 | TPL | 4/18/94 | - | 5/12/94 | - | 6/7/94 | . | 7/1/94 | - | | | | | | | | | 3 | 0 | N |
| B-03 | R-M1/8 | TPL | 4/23/92 | - | 5/5/92 | . | /17/92 | . | /8/92 | . | /16/93 | - | 7/8/93 | - | 7/16/93 | - | 7/29/93 | - | 2 | 8 | Y |
| B-03 | R.M1/6 | TPL: | 4/23/92 | - | 5/5/92 | . | 1 6/1 92 | . | 7/8/92 | - | 7/8/93 | - | 7/16/93 | - | 7/30/93 | - | 8/5/93 | - | 2 | 8 | Y |
| B-03 | R-M1/4 | TPL | 4/23/92 | - | 5/5/92 | . | /18/92 | - | 7/8/92 | . | /16/93 | . | 7/8/93 | . | /1.6/93 | - | 7/29/93 | - | 3 | 0 | Y |
| B-03 | R.M1/4 | TPL | 4/18/94 | - | 5/12/94 | . | /29/94 | . | 7/25/94 | - | | | | | | | | | 3 | 0 | Y |
| B-03 | R.M1/3 | TPL | 4/23/92 | . | 5/5/92 | . | 6l7/92 | . | /8/92 | - | 6/16/93 | . | 7/8/93 | - | 7/16/93 | - | 7/29/93 | - | 3 | 23 | Y |
| B-03 | R.M1/3 | TPL | 6/7/94 | . | /16/94 | . | /23/94 | . | /1/74 | . | | | | | | | | | 3 | 0 | Y |
| B-03 | R-M1/2 | TPL | 4/23/92 | . | 5/5/92 | . | /17/92 | - | 7/8/92 | - | 6/16/93 | . | 7/8/93 | - | 7/16/93 | . | 7/29/93 | - | 3 | 0 | Y |
| B-03 | R.M1/2 | TPL | 4/18/94 | . | /12/94 | . | /29/94 | - | 7/25/94 | - | | | | | | | | | 3 | 0 | Y |
| B-04 | 1 | SPI | 5/13/92 | . | 6/3/92 | . | 618/92 | . | /16/92 | - | 4/28/93 | - | 5/20/93 | - | 6/21/93 | - | 7/20/93 | - | 2 | 15 | Y |
| B-04 | 2 | SPI | 5/13/92 | . | 6/3/92 | . | 619/92 | . | /16/92 | - | 4/28/93 | - | 5/20/93 | - | 6/22/93 | . | /20/93 | - | 2 | 15 | Y |
| B-05 | R.M1/5 | TPL | 4/23/92 | - | 5/5/92 | . | 618/92 | . | /8/92 | . | 7/8/93 | . | 7/22/93 | - | 7/30/93 | - | 8/5/93 | - | 2 | 9 | N |
| B-06 | R-M 11 | TPL | 6/16/93 | . | 7/8/93 | . | /16/93 | . | /29/93 | . | | | | | | | | | 1 | 7 | Y |
| B-06 | R-M1/10 | TPL | 6/16/93 | . | 7/8/93 | . | /1 6/93 | . | /29/93 | . | | | | | | | | | 1 | 0 | Y |
| B-07 | R-M | T | 5/5/92 | 4/23/92 | . | | . | /17/92 | 7/8/92 | - | 6/16/93 | - | 7/8/93 | - | 7/16/93 | - | 7/29/93 | - | 2 | 15 | Y |
| B-08 | R.R2/A | RSL | 6/11/92 | - | 7/01/92 | . | /20/93 | . | /3/93 | . | | | | | | | | | 2 | 6 | N |
| B-08 | R.R2/B | RSL | 6/18/92 | . | /1 6/92 | . | 7/20/93 | . | /27/93 | . | | | | | | | | | 2 | 6 | N |
| B-W | R.M3/2 | TPL | 8/3/93 | - | | | | | | | | | | | | | | | 1 | 0 | N |
| B-09 | R.R3/C | RSL | 7/1/92 | . | | | | | | | | | | | | | | | 1 | 8 | N |



Pacific Northwestern Biological - P.O. Box 150. Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-09 | R - R3/B | RSL | 6/18/92 | - | 7/16/92 | - | | | | | | | | | | | | | 1 | 8 | N |
| B-09 | R-R3/A | RSL | 6/9/92 | - | 7/27/93 | - | | | | | | | | | | | | | 2 | 8 | N |
| B-10 | R - R5/B | RSL | 6/8/92 | - | 7/15/92 | - | /27/93 | | | | | | | | | | | | 2 | 0 | N |
| B-IO | R-R5/A | RSI, | 7/27/92 | - | | | | | | | | | | | | | | | 1 | 0 | N |
| B-11 | R | - R4/A | RSL | 6/9/92 | - 7/1/92 | - | /27/93 | - | | | | | | | | | | | 2 | 7 | N |
| B-11 | R-R4/B | RSL | 7/15/92 | - | 6/25/93 | - | /20/93 | - | /3/93 | - | | | | | | | | | 2 | 7 | N |
| B- | 1 | SPI | 5/12/92 | - | 6/2/92 | - | /18/92 | - | /15/92 | - | /24/93 | - | | | | | | | 2 | 15 | Y |
| B-12 | 2 | SPI | 5/12/92 | - | 6/2/92 | - | 6/19/92 | - | 7/15/92 | - | /20/9 | - | | | | | | | 2 | 7 | Y |
| B-12 | 3 | SPI | 5/12/92 | - | 6/2/92 | - | /19/92 | - | /14/92 | - | /29/93 | - | /29/93 | - | | | | | 2 | 15 | Y |
| B. | 4 | SPI | 5/12/92 | - | 6/2/92 | - | /19/92 | - | /15/92 | - | 4/29/93 | - | 5/20/93 | - | 6/24/93 | - | 7/20/93 | - | 2 | 30 | Y |
| B-13 | R-R1/A | RSL | 7/2/92 | - | 7/17/92 | - | | | | | | | | | | | | | 1 | 9 | N |
| B-13 | R-R1/B | RSL | 7/9/92 | - | /30/92 | - | | | | | | | | | | | | | 1 | 10 | N |
| B-14 | N | - R1/A | RSL | 6/19/92 | - /17/92 | - | 7/14/93 | - | /5/93 | - | | | | | | | | | 2 | 3 | N |
| B-14 | N- F7/27/92 | S L | 6/24/92 | - | | - | /29/93 | - | | | | | | | | | | | 2 | 17 | N |
| B-15 | 1 | PNWB | 5/12/94 | - | /19/94 | - | | | | | | | | | | | | | 1 | 0 | N |
| B- | 2 | PNWB | 5/31/94 | - | 7/25/94 | - | | | | | | | | | | | | | 1 | 0 | N |
| B-15 | 3 | PNWB | 5/22/94 | - | 7/17/94 | - | | | | | | | | | | | | | 1 | 0 | N |
| D-1 | 1/A | SPI | 4/29/93 | - | 6/7/94 | - | | | | | | | | | | | | | 2 | 8 | N |
| D-1 | 1/C | SPI | 5/21/93 | - | /29/94 | - | | | | | | | | | | | | | 2 | 15 | N |
| D-1 | 1/B | SPI | 6/25/93 | - | 5/11/94 | - | | | | | | | | | | | | | 2 | 15 | N |
| D-1 | 1/D | SPI | 7/21/93 | - | 7/6/94 | - | | | | | | | | | | | | | 2 | 23 | N |
| D-1 | 2/C | s PI | 4/29/93 | - | 6/7/94 | - | | | | | | | | | | | | | 2 | 23 | N |
| D-1 | 2/A | SPI | 5/21/93 | - | /11/94 | - | | | | | | | | | | | | | 2 | 15 | N |
| D-1 | 2/B | SPI | 6/25/93 | - | /29/74 | - | | | | | | | | | | | | | 2 | 23 | N |
| D-1 | 2/D | SPI | 7/21/93 | - | 7/6/94 | - | | | | | | | | | | | | | 2 | 15 | N |



Pacific Northwestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-1 | 31A | SPI | 4/29/93 | - | /21/93 | - | /11/94 | - | | | | | | | | | | 2 | | 23 | N |
| D-1 | 3/B | SPI | 5/25/93 | - | 6/7/94 | - | /29/94 | | | | | | | | | | | 2 | | 15 | N |
| D-1 | . | SPI | 6/25/93 | - | 7/6/94 | - | | | | | | | | | | | | 2 | | 8 | N |
| M- | ·M /6 | TPI. | 7/9/93 | - | | | | | | | | | | | | | | 1 | | 23 | Y |
| M- | '-M | TPL | 7/9/93 | - | | | | | | | | | | | | | | 1 | | 23 | Y |
| M- | S-M1/14 | TPL | 4/21/94 | - | 5/17/94 | - | /16/94 | - | /25/94 | - | | | | | | | | 1 | | 30 | N |
| M-2 | S-M1/13 | TPL | 4/21/94 | - | /17/94 | - | /16/94 | - | 7/25/94 | - | | | | | | | | 1 | | 30 | N |
| M- | -M 12 | TPL | 4/21/94 | - | 5/17/94 | - | /10/94 | - | /12/94 | - | | | | | | | | 1 | | 15 | N |
| M-2 | S-M1 11 | TPL | 4/21/94 | - | 5/17/94 | - | /16/94 | - | 7/25/94 | - | | | | | | | | 1 | | 30 | N |
| M-2 | S-M1/IO | TPL | 4/21/94 | - | 5117194 | - | 6/16/94 | - | /25/94 | - | | | | | | | | 1 | | 15 | N |
| M- | S-M1/9 | TPL | 4/21/94 | - | 5/17/94 | - | /10/94 | - | /12/94 | - | | | | | | | | 1 | | 30 | N |
| M- | -M | TPL | 7/9/93 | - | /16/93 | - | /23/93 | - | /30/93 | - | 4/21/94 | - | 5/17/94 | - | 6/14/94 | - | 7/12/94 | - | 2 | 15 | Y |
| M- | -M | TPL | 7/9/93 | - | 7/16/93 | - | 7/23/93 | - | 7/30/93 | - | 4/21/94 | - | 5/17/94 | - | 6/10/94 | - | 7/12/94 | - | 2 | 15 | Y |
| M- | -M1/2 | TPL | 7/9/93 | - | 7/16/93 | - | /23/93 | - | /30/93 | - | /12/94 | - | /17/94 | - | 6/16/94 | - | 7/25/94 | - | 2 | 8 | Y |
| M- | S-M1/1 | TPL | 7/9/93 | - | /16/93 | - | /23/93 | - | /30/93 | - | /21/94 | - | /17/94 | - | 6/13/94 | - | 7/12/94 | - | 2 | 8 | Y |
| M-3 | S-R2/A | RSL | 6/12/92 | - | 7/29/92 | - | | | | | | | | | | | | 1 | | 0 | N |
| M-3 | S-R2/B | RSL | 6/19/92 | - | | | | | | | | | | | | | | 1 | | 0 | N |
| M- | -R | RSL | 7/14/92 | - | | | | | | | | | | | | | | 1 | | 0 | N |
| M-4 | S-M2/1 | TPL | 7/14/93 | - | 7/22/93 | - | | | | | | | | | | | | 1 | | 0 | N |
| M-4 | S-R3/A | RSL | 6/12/92 | - | /24/92 | - | | | | | | | | | | | | 1 | | 26 | N |
| M-4 | S - R3/B | RSL | 6/19/92 | - | /29/92 | - | | | | | | | | | | | | 1 | | 8 | N |
| M- | -R4 | RSL | 6/19/92 | - | 7/10/92 | - | | | | | | | | | | | | 1 | | 9 | N |
| M- | S-R4/B | RSL | 6119192 | - | /10/92 | - | | | | | | | | | | | | 1 | | 8 | N |
| M- | -R | RSL | 7/2/92 | - | /17/92 | - | | | | | | | | | | | | 1 | | 2 | N |
| M-6 | S - R5/A | RSL | 7/2/92 | - | | | | | | | | | | | | | | 1 | | 10 | N |



Pacific NorthWestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M-6 | S..R5/B | RSI. | 7/17/92 | - | 7/24/92 | - | | | | | | | | | | | | 1 | | 9 | N |
| M - 6 | S-R5/C | RSL | 7/24/92 | - | | | | | | | | | | | | | | 1 | | 9 | N |
| O-I | 1 | NRM | 8/21/91 | - | 8/29/91 | . | | | | | | | | | | | | 1 | | 3 | N |
| O-1 | 2 | NRM | 8/21/91 | - | 8/29/91 | . | /11/92 | - | 6/18/92 | - | | | | | | | | 2 | | 0 | N |
| O-l | 3 | NRM | 8/21/91 | - | /29/91 | - | | | | | | | | | | | | 1 | | 15 | N |
| O-l | 4 | NRM | 6/18/92 | - | | | | | | | | | | | | | | 1 | | 0 | N |
| O-l | 5 | NRM | 6/11/92 | - | | | | | | | | | | | | | | 1 | | 0 | N |
| S | I | PNWB | 7/6/92 | - | 7/9/93 | - | | | | | | | | | | | | 2 | | 23 | Y |
| S | 2 | PNWB | 7/11/92 | - | /31/93 | - | | | | | | | | | | | | 2 | | 30 | Y |
| S | 3 | PNWB | 6/7/92 | - | 5/8/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 4 | PNWB | 7/18/92 | - | 7/31/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 5 | PNWB | 6/7/92 | - | /30/93 | - | | | | | | | | | | | | 2 | | 23 | Y |
| S | 6 | PNWB | 6/20/92 | - | /24/93 | - | | | | | | | | | | | | 2 | | 23 | Y |
| S | 7 | PNWB | 5/10/92 | - | /21/93 | - | /29/93 | - | | | | | | | | | | 2 | | 8 | Y |
| S | 8 | PNWB | 7/24/92 | - | 7/9/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 9 | PNWB | 5/8/92 | - | 7/9/93 | - | | | | | | | | | | | | 2 | | 27 | Y |
| S | 10 | PNWB | 5/16/92 | - | /23/92 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 11 | PNWB | 5/20/92 | - | 7/17/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 12 | PNWB | 8/5/93 | - | | | | | | | | | | | | | | 1 | | 8 | Y |
| S | 15 | PNWB | 6/5/93 | - | | | | | | | | | | | | | | 1 | | 15 | Y |
| S | 16 | PNWB | 6/20/92 | - | /21/93 | - | /29/93 | - | | | | | | | | | | 2 | | 23 | Y |
| S | 17 | PNWB | 7/6/92 | - | /19/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 18 | PNWB | 7/24/92 | - | /21/93 | - | /12/93 | - | | | | | | | | | | 2 | | 15 | Y |
| S | 19 | PNWB | 5/30/92 | - | /24/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 20 | PNWB | 7/11/92 | - | 7/31/93 | - | | | | | | | | | | | | 2 | | 15 | Y |



Pacific Northwestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 21 | PNWB | 7/11/92 | - | 6/26/93 | - | | | | | | | | | | | | | 2 | 15 | Y |
| S | 22 | PNWB | 7/11/92 | - | 7/31/93 | - | | | | | | | | | | | | | 2 | 15 | Y |
| S | 23 | PNWR | 6/20/92 | - | 6/19/93 | - | | | | | | | | | | | | | 2 | 23 | Y |
| S | 24 | PNWB | 5/8/92 | - | 7/17/93 | - | | | | | | | | | | | | | 2 | 15 | Y |
| | 25 | PNWB | 5/20/92 | - | 7/18/92 | - | 4/23/93 | - | 4/30/93 | - | | | | | | | | | 2 | 15 | Y |
| S | 26 | PNWB | 5/8/92 | - | 5/15/93 | - | | | | | | | | | | | | | 2 | 15 | Y |
| S | 27 | PNWB | 5/10/92 | - | | | | | | | | | | | | | | | 1 | 15 | Y |
| | 28 | PNWB | 5/16/92 | - | | | | | | | | | | | | | | | | 15 | |
| S | 29 | PNWB | 7124192 | - | 7/25/93 | - | | | | | | | | | | | | | 2 | 23 | Y |
| S | 30 | PNWB | 5/30/92 | - | 5/8/93 | - | | | | | | | | | | | | | 2 | 15 | Y |
| S | 31 | PNWB | 5/20/92 | - | /12/93 | - | | | | | | | | | | | | | 2 | 15 | Y |
| S | 32 | PNWB | 5/30/92 | - | 5115193 | - | | | | | | | | | | | | | 2 | 15 | Y |
| S | 33 | PNWB | 7/18/92 | - | 8/5/93 | - | | | | | | | | | | | | | 2 | 15 | Y |
| S | 34 | PNWB | 6/5/93 | - | | | | | | | | | | | | | | | 1 | 15 | Y |
| S | 35 | PNWB | 6/26/93 | - | | | | | | | | | | | | | | | 1 | 15 | Y |
| S | 36 | PNWB | 6/5/93 | - | | | | | | | | | | | | | | | 1 | 23 | Y |
| S | 37 | PNWB | 7/10/93 | - | | | | | | | | | | | | | | | 1 | 15 | Y |



Pacific Northwestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SURVEY VISITS: | | | 113 | | 94 | | 45 | | 37 | | 19 | | 17 | | 16 | | 16 | | | | |

Total Acres of MAMU Habitat [Surveyed: 1411

**TOTAL NUMBER OF SURVEY VISITS = 357** | **TOTAL NUMBER OF MAMU DETECTIONS = 0**

**Note:** In some cases, several different survey routes used the same survey station during different survey years. In the database, the data for these surveys were consolidated into a single record under the first survey run. Data from the following stations were combined:

R-RYA = R-M3/4
R-R2/B = R-M3/3
R-RYA = R-M3/1
R-R5/B = R-M2/1
R-R4/A = R-M2/2
R-R4/B = R-M2/3
N-R1/A = S-M2/3
N-R1/B = S-M2/2



Pacific Northwestern Biological • P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

# APPENDIX IV

# BEAR RIVER STUDY AREA

# MAMU SURVEY DATABASE

# BEAR RIVER STUDY AREA MAMU SURVEY DATABASE

**Run: 1117194**

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-01 | R-M1/7 | TPL | 4/23/92 | - | 5/13/92 | . | /17/92 | - | 7/8/92 | . | 7/8/93 | . | /15/93 | . | 7/29/93 | - | 8/5/93 | . | 2 | 26 | Y |
| H-02 | R.M1/1 | TPL | 4123192 | - | 5/5/92 | . | /13/92 | - | 6/17/92 | - | 6/16/93 | . | 7/8/93 | - | 7/16/93 | . | 7/29/93 | - | 3 | 15 | N |
| B-02 | R.M1/1 | TPL | 4/18/94 | - | 5/12/94 | . | 6/7/94 | . | /1/94 | . | | | | | | | | | 3 | 0 | N |
| B-03 | R-M1/8 | TPL | 4/23/92 | - | 5/5/92 | . | /17/92 | . | /8/92 | - | 6/16/93 | . | 7/8/93 | - | 7/16/93 | - | 7/29/93 | - | 2 | 8 | Y |
| B-03 | R.M1/6 | TPL: | 4/23/92 | - | 5/5/92 | . | /18/92 | - | 7/8/92 | - | 7/8/93 | . | /16/93 | . | /30/93 | - | 8/5/93 | - | 2 | 8 | Y |
| B-03 | R.M1/4 | TPL | 4/23/92 | - | 5/5/92 | . | /18/92 | . | /8/92 | - | 6/16/93 | . | 7/8/93 | . | /16/93 | - | 7/29/93 | - | 3 | 0 | Y |
| B-03 | R.M1/4 | TPL | 411819 4 | - | 5/12/94 | . | /29/94 | - | 7/25/94 | - | | | | | | | | | 3 | 0 | |
| B-03 | R-M | TPL | 4/23/92 | . | 5/5/92 | . | /17/92 | . | /8/92 | . | /16/93 | . | 7/8/93 | . | /16/93 | . | /29/93 | - | 3 | 23 | Y |
| B-03 | R-M1/3 | TPL | 6/7/94 | - | 6/16/94 | - | /23/94 | - | 7/1/74 | - | | | | | | | | | 3 | 0 | Y |
| B-03 | R.M1/2 | TPL | 4/23/92 | - | 5/5/92 | . | /17/92 | . | /8/92 | - | 6/16/93 | - | 7/8/93 | . | /16/93 | - | 7/29/93 | - | 3 | 0 | Y |
| B-03 | R.M1/2 | TPL | 4/18/94 | - | 5/12/94 | - | 6/29/94 | - | 7/25/94 | - | | | | | | | | | 3 | 0 | Y |
| B-04 | 1 | SPI | 5113192 | . | 6/3/92 | . | /18/92 | - | 7/16/92 | . | /28/93 | . | /20/93 | - | 6/21/93 | - | 7/20/93 | - | 2 | 15 | Y |
| B-04 | 2 | SPI | 5/13/92 | - | 6/3/92 | . | /19/92 | . | /16/92 | . | /28/93 | . | 5/20/93 | - | 6/22/93 | - | 7/20/93 | - | 2 | 15 | Y |
| B-05 | R-M | TPL | 4/23/92 | - | 5/5/92 | . | /18/92 | - | 7/8/92 | . | 7/8/93 | . | 7/22/93 | - | 7/30/93 | - | 8/5/93 | . | 2 | 9 | N |
| B-06 | R -M1/11 | TPL | 6/16/93 | - | 7/8/93 | - | /16/93 | - | /29/93 | - | | | | | | | | | 1 | 7 | Y |
| B-06 | R-M1/10 | T P L | 6/16/93 | - | 7/8/93 | - | /16/93 | - | /29/93 | - | | | | | | | | | 1 | 0 | Y |
| B-07 | R-M1/9. | TPL | 4/23/92 | - | 5/5/92 | - | 6117192 | | 7/8/92 | . | /16/93 | . | 7/8/93 | . | /16/93 | . | 7/29/93 | - | 2 | 15 | Y |
| B-08 | R-R2/A | RSL | 6/11/92 | - | 7/01/92 | - | 7/20/93 | . | /3/93 | . | | | | | | | | | 2 | 6 | N |
| B-08 | R.R2/B | RSL | 6118192 | . | 116192 | . | /20/93 | - | 7127193 | . | | | | | | | | | 2 | 6 | N |
| B-09 | R-M3/2 | TPL | 8/3/93 | - | | | | | | | | | | | | | | | 1 | 0 | N |
| B-09 | R.R3/C | RS L | 7/1/92 | - | | | | | | | | | | | | | | | 1 | 8 | N |



Pacific Northwestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-09 | R-R3/B | RSI, | 6/18/92 | - | /16/92 | - | | | | | | | | | | | | | 1 | 8 | N |
| B-09 | R-R3/A | RSL | 6/9/92 | - | 7/27/93 | - | | | | | | | | | | | | | 2 | 8 | N |
| B-10 | R-R5/B | RSI, | 6/8/92 | - | /1 5/92 | - | /27/93 | | | | | | | | | | | | 2 | 0 | N |
| B-IO | R-R5/A | RSI, | 7/27/92 | - | | | | | | | | | | | | | | | 1 | 0 | N |
| B-11 | R-R4/A | RSL | 6/9/92 | - | 7/1/92 | - | /27/93 | - | | | | | | | | | | | 2 | 7 | N |
| B-l I | R - R4/B | RSL | 7/1 5/92 | - | 6/25/93 | - | /20/93 | - | /3/93 | - | | | | | | | | | 2 | 7 | N |
| B-12 | I | SPI | 5/12/92 | - | 6/2/92 | - | 6/18/92 | - | /15/92 | - | 6/24/93 | - | | | | | | | 2 | 15 | Y |
| B-12 | 2 | SPI | 5/12/92 | - | 612192 | - | /19/92 | - | 7/15/92 | - | /20/93 | - | | | | | | | 2 | 7 | Y |
| B-12 | 3 | SPI | 5/12/92 | - | 6/2/92 | - | /19/92 | - | /14/92 | - | /29/93 | - | /29/93 | - | | | | | 2 | 15 | Y |
| B-12 | 4 | SPI | 5/12/92 | - | 6/2/92 | - | /19/92 | - | /15/92 | - | /29/93 | - | /20/93 | - | 6/24/93 | - | 7/20/93 | - | 2 | 30 | Y |
| B-13 | R-R1/A | RSL | 7/2/92 | - | /17/92 | - | | | | | | | | | | | | | 1 | 9 | N |
| B-13 | R-R1/B | RSL | 7/9/92 | - | /30/92 | - | | | | | | | | | | | | | 1 | 10 | N |
| B-14 | N-R1/A | RSL | 6/19/92 | - | /17/92 | - | /14/93 | - | /5/93 | - | | | | | | | | | 2 | 3 | N |
| B-14 | N-R1/B | RSL | 6/24/92 | - | /27/92 | - | /29/93 | - | | | | | | | | | | | 2 | 17 | N |
| B-15 | 1 | PNWB | 94 5/12/ | - | 7/19/94 | - | | | | | | | | | | | | | 1 | 0 | N |
| B- | 2 | PNWB | 5/31/94 | - | 7/25/94 | - | | | | | | | | | | | | | 1 | 0 | N |
| B-15 | 3 | PNWB | 5/22/94 | - | 7/17/94 | - | | | | | | | | | | | | | 1 | 0 | N |
| D-1 | 1/A | SPI | 4/29/93 | - | 6/7/9 | - | | | | | | | | | | | | | 2 | 8 | N |
| D-l | 1/C | SPI | 5/21/93 | - | /29/94 | - | | | | | | | | | | | | | 2 | 15 | N |
| D-1 | 1/B | SPI | 6/25/9 | - | /1 1/94 | - | | | | | | | | | | | | | 2 | 15 | N |
| D-l | 1/D | SPI | 7/21/93 | - | 7/6/94 | - | | | | | | | | | | | | | 2 | 23 | N |
| D-l | 2/C | SPI | 4/29/93 | - | 6/7/94 | - | | | | | | | | | | | | | 2 | 23 | N |
| D-l | 2/A | SPI | 5/21/93 | - | /1 1194 | - | | | | | | | | | | | | | 2 | 15 | N |
| D-l | 2/B | SPI | 6/25/93 | - | /29/74 | - | | | | | | | | | | | | | 2 | 23 | N |
| D-l | 2/D | SPI | 7/21/93 | - | 7/6/94 | - | | | | | | | | | | | | | 2 | 15 | N |



Pacific Northwestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-1 | 3/A | SPI | 4/29/93 | - | 7/21/93 | - | /11/94 | - | | | | | | | | | | 2 | | 23 | N |
| D-1 | 3/B | SPI | 5/25/93 | - | 6/7/94 | - | /29/94 | | | | | | | | | | | 2 | | 15 | N |
| D-I | 3/C | SPI | 6/25/93 | - | 7/6/94 | - | | | | | | | | | | | | 2 | | 8 | N |
| M- | .M | TPL | 7/9/93 | - | | | | | | | | | | | | | | I | | 23 | Y |
| M- | -M | TPL | 7/9/93 | - | | | | | | | | | | | | | | 1 | | 23 | Y |
| M-2 | S.M1/14 | TPL | 4/21/94 | - | 5/17/94 | - | /16/94 | - | /25/94 | - | | | | | | | | 1 | | 30 | N |
| M- | -M 13 | TPL | 4/21/94 | - | 5/17/94 | - | /16/94 | - | /25/94 | - | | | | | | | | 1 | | 30 | N |
| M. | S-M1/12 | TPL | 4/21/94 | - | /17/94 | - | /10/94 | - | 7/12/94 | - | | | | | | | | 1 | | 15 | N |
| M-2 | S.M1/11 | TPL | 4/21/94 | - | 5/17/94 | - | 6/16/94 | - | 7/25/94 | - | | | | | | | | 1 | | 30 | N |
| M-2 | S.M1/10 | TPL | 4/21/94 | - | /17/94 | - | /16/94 | - | /25/94 | - | | | | | | | | I | | 15 | N |
| M-2 | S-M1/9 | TPL | 4/21/94 | - | /17/94 | - | /10/94 | - | /12/94 | - | | | | | | | | 1 | | 22 | N |
| M-2 | S.M1/4 | TPL | 7/9/93 | - | /16/93 | - | /23/93 | - | /30/93 | - | /21/94 | - | /17/94 | - | 6/14/94 | - | /12/94 | - | 2 | 15 | Y |
| M-2 | S-M1/3 | TPL | 7/9/93 | - | 7/16/93 | - | 7/23/93 | - | 7/30/93 | - | 4/21/94 | - | 5/17/94 | - | 6/10/94 | - | 7/12/94 | - | 2 | 15 | Y |
| M-2 | S-M1/2 | TPL | 7/9/93 | - | 7/16/93 | - | 7/23/93 | - | 7/30/93 | - | 4/12/94 | - | 5/17/94 | - | 6/16/94 | - | 7/25/94 | - | 2 | 8 | Y |
| M-2 | S-M1/1 | TPL | 7/9/93 | - | 7/16/93 | - | 7/23/93 | - | 7/30/93 | - | 4/21/94 | - | 5/17/94 | - | 6/13/94 | - | 7/12/94 | - | 2 | 8 | Y |
| S | 1 | PNWB | 7/6/92 | - | 7/9/93 | - | | | | | | | | | | | | 2 | | 23 | Y |
| S | 2 | PNWB | 7/11/92 | - | 7/31/93 | - | | | | | | | | | | | | 2 | | 30 | Y |
| S | 3 | PNWB | 6/7/92 | - | 5/8/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 4 | PNWB | 7/18/92 | - | 7/31/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 5 | PNWB | 6/7/92 | - | 4/30/93 | - | | | | | | | | | | | | 2 | | 23 | Y |
| S | 6 | PNWB | 6/20/92 | - | /24/93 | - | | | | | | | | | | | | 2 | | 23 | Y |
| S | 7 | PNWB | 5/10/92 | - | 5/21/93 | - | /29/93 | - | | | | | | | | | | 2 | | 8 | Y |
| S | 8 | PNWB | 7/24/92 | - | 7/9/93 | - | | | | | | | | | | | | 2 | | 15 | Y |
| S | 9 | PNWB | 5/8/92 | - | 7/9/93 | - | | | | | | | | | | | | 2 | | 23 | Y |
| S | 1 0 | PNWB | 5/16/92 | - | 4/23/92 | - | | | | | | | | | | | | 2 | | 15 | Y |



Pacific Northwestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 11 | PNWB | 5/20/92 | - | 7/17/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 12 | PNWB | 8/5/93 | - | | | | | | | | | | | | | | 1 | 8 | | Y |
| S | 15 | PNWB | 6/5/93 | - | | | | | | | | | | | | | | 1 | 15 | | Y |
| S | 16 | PNWB | 6/20/92 | - | 5/21/93 | . | /29/93 | . | | | | | | | | | | 2 | 23 | | Y |
| S | 17 | PNWB | 7/6/92 | - | 6/19/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 18 | PNWB | 7/24/92 | - | 5/21/93 | . | /12/93 | . | | | | | | | | | | 2 | 15 | | Y |
| S | 19 | PNWB | 5/30/92 | . | /24/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 20 | PNWB | 7/11/92 | - | 7/31/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 21 | PNWB | 7/11/92 | - | 6/26/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 22 | PNWB | 7/11/92 | . | /31/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 23 | PNWB | 6120192 | . | /19/93 | - | | | | | | | | | | | | 2 | 23 | | Y |
| S | 24 | PNWB | 5/8/92 | - | 7/17/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 25 | PNWB | 5/20/92 | . | /18/92 | . | /23/93 | . | /30/93 | . | | | | | | | | 2 | 15 | | Y |
| S | 26 | PNWB | 5/8/92 | - | 5/15/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| | 27 | PNWB | 5/10/92 | - | | | | | | | | | | | | | | | 15 | | |
| S | 28 | PNWB | 5/16/92 | - | | | | | | | | | | | | | | 1 | 15 | | Y |
| S | 29 | PNWB | 7/24/92 | . | 7/25/93 | . | | | | | | | | | | | | 2 | 23 | | Y |
| S | 30 | PNWB | 5/30/92 | - | 5/8/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 31 | PNWB | 5/20/92 | . | /12/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 32 | PNWB | 5130192 | . | 5/15/97 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 33 | PNWB | 7/18/92 | - | 8/5/93 | . | | | | | | | | | | | | 2 | 15 | | Y |
| S | 34 | PNWB | 6/5/93 | - | | | | | | | | | | | | | | 1 | 15 | | Y |
| S | 35 | PNWB | 6126193 | . | | | | | | | | | | | | | | 1 | 15 | | Y |
| S | 36 | PNWB | 6/5/93 | . | | | | | | | | | | | | | | 1 | 23 | | Y |
| S | 37 | PNWB | 7/10/93 | - | | | | | | | | | | | | | | 1 | 15 | | Y |



Pacific Northwestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

| Survey | Station | Source | Visit 1 | R/1 | Visit 2 | R/2 | Visit 3 | R/3 | Visit 4 | R/4 | Visit 5 | R/5 | Visit 6 | R/6 | Visit 7 | R/7 | Visit 8 | R/8 | Yrs | Acres | DFG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SURVEY VISITS: | | | 96 | | 83 | | 44 | | 36 | | 19 | | 17 | | 16 | | 16 | | | | |

**Total Acres of MAMU Habitat Surveyed: 1304**

**TOTAL NUMBER OF SURVEY VISITS = 327**

**TOTAL NUMBER OF MAMU DETECTIONS = 0**

**Note:** In some cases, several different survey routes used the same survey station during different survey years. In the database, the data for these surveys were consolidated Into a single record under the first survey run. Data from the following stations were combined:

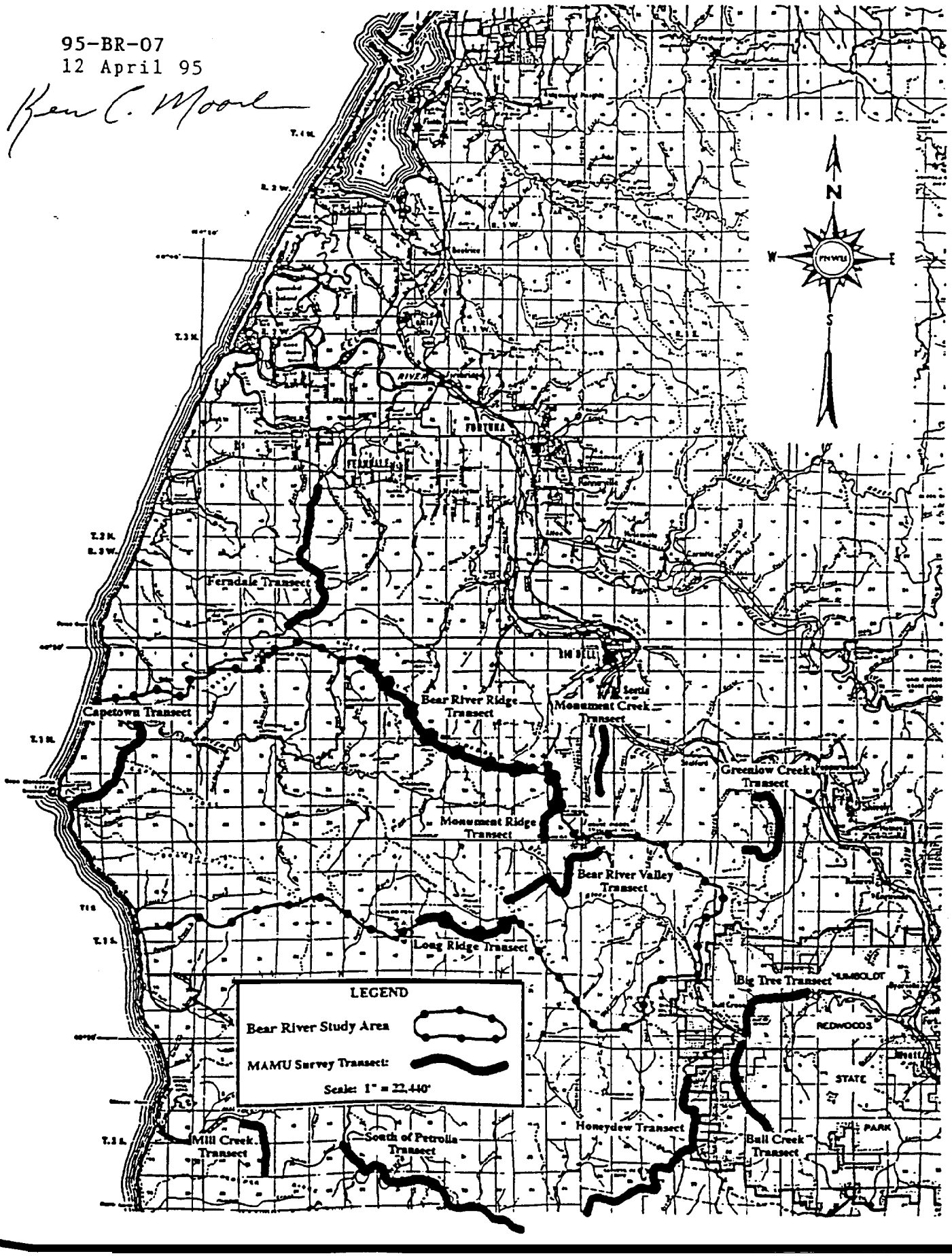
**R-R2/A = R-M3/4**
**R-R2/B = R-M3/3**
R-RUA = **R-M3/1**
**R-R5/B = R-M2/1**
R-RUA = **R-M2/2**
R-RUB = **R-M2/3**
**N-R1/A = S-M2/3**
**N-R1/B = S-M2/2**



Pacific Northwestern Biological - P.O. Box 150, Trinidad, CA 95570 - Phone or Fax: 707-839-4643

# MARBLED MURRELET SURVEY TRANSECT LOCATION MAP

95-BR-07
12 April 95
Ken C. Moore



# APPENDIX V

# CRAIG STRONG'S OFFSHORE MARBLED MURRELET SURVEY DATA

MAD RIVER BIOLOGISTS

1696 Ocean Dr. • McKinleyville CA 95521

Voice: 707/839-8134 • Fax: 707/839-4656

September 21,1994

Scotia Pacific Holding Co.
**P.O. Box 712**
**Scotia CA 95565**

Attn: Sal Chinnici

**Hi Sal,**

Here are the Marbled Murrelet detections at sea from False Cape (40°31') to Big Flat (40°09 '), 11 **nautical miles** down coast from Punta Cords. This area was surveyed on 23 June 1994 in fair to poor conditions (Beaufort 34) with no murreletes **detected.** On 23 July this area was surveyed in largely fair to good conditions **(Beaufort 2-4)** with the below listed 9 detections of murrclets (15 birds). One of the two detections north of Punta Corda was probably a fledgling, but we were unable to confirm this in the rough conditions there.

| Record# | Datc | Location | Beaufort | Obscond | Shoredist | Time | No. | No.chick | Dist | Side | Beh | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 114 | 07/23/94 | Steamboat | 3 | F | 500 | 1215 | 1 | 0 | 40 | P | FS | |
| 119 | 07/23/94 | steamboat | 4 | P<br>F-G | 500<br>500 | 1225 | 1 | 1 | 25 | P | D | Possible Chick, 4.1m from WPT |
| 135 | 07/23/94 | Punta Gorda Lthse | 3 | F-G | 400 | 1349 | 2 | 0 | so | P | S | |
| 140 | 07/23/94 | Punta Gorda Lthse | 3 | | | 13572 | | 0 | 60 | S | D | AHY |
| 145 | 07/23/94 | Punta Gorda Lthse | 2 | G | 400 | 1406 | 2 | 0 | 40 | S | S | AHY |
| 150 | 07/23/94 | Punta Gorda Lthse | 2 | G | 400 | 1418 | 2 | 0 | 10 | S | B D | AHY |
| 151 | 07/23/94 | Punta Gorda Lthse | 2 | G | 400 | 1419 | 1 | 0 | 70 | PB | FSW | AHY |
| 152 | 07/23/94 | Punta Gorda Lthse | 2 | G | 400 | 1419 | 2 | 0 | SO | B | FW | AHY |
| 167 | 07/23/94 | Tip of Big Flat | 2 | G | 400 | 1517 | 2 | 0 | 60 | SB | FSW | AHY |

**Description of Fields:**

| | |
|---|---|
| **Location** | recorded when passing landmark on shore and repeated in data fieid until next locaiton encountered (i.e.: not all observations occured at that location). |
| **Obscond** | G = good, F = fair, P = poor. corresponding to Beaufort sea states of 2, 3. and 4+ respectiveley. |
| **Shoredist** | estimated distance from shore |
| **No.** | number of birds detected |
| **No.chick** | number of birds of fledgling age. probable fledglings also included. |
| Dist | distance form the vessel when respond to vessel or are passed at closest approach. |
| Side | port, port bow, bow. starboard bow,. or starboard (fin letters abbreviated). |
| **Behavior** | F = fly, S = stay, D = dive, F_ = fly in specified direction |

Sincerely,

Ron LeValley for Craig Strong (CCR)

Ron **LeValley**
Mad River Biologists